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1959 Pesticide Exports Valued At \$85.9 Million

USDA Tabulations Show Increase Over 1958 Totals

WASHINGTON—U.S. export shipments of pesticides during 1959 were valued at \$85,919,407, according to Harold H. Shepard and Charlotte A. Graham of the Commodity Stabilization Service, U.S. Department of Agriculture.

The total compared with \$82,066,014 for 1958 and \$86,002,270 for 1957, the report noted.

The following tabulations, which appeared in the current issue of the News and Pesticide Review published by the National Agricultural Chemicals Assn., show for selected pesticides the value of the 1959 exports (shipments valued at \$500 and over, combined with a 10% sampling of those valued from \$100 to \$499):

DDT, technical (to 47 countries, value \$2,891,542)—Mexico, \$716,548; Nicaragua, \$440,872; Turkey, \$329,892; Canada, \$300,078; New Zealand, \$252,522; all others, \$851,630.

DDT, formulations containing 20% to 74% (to 36 countries, value \$1,314,562)—Canada, \$262,152; Turkey, (Turn to **PESTICIDES**, page 8)

Production, Handling of Phosphate Feature at Round Table's First Day

By **LAWRENCE A. LONG**
Editor of Croplife

WASHINGTON—Six hours of discussion on various aspects of phosphates, including its production, its use in mixed fertilizer, its storage and handling characteristics and its behavior in formulation processes featured the first day of the 10th Fertilizer Industry Round Table here Nov. 2. Some 450 persons representing the fertilizer manufacturing industry of

the U.S. gathered at the Mayflower Hotel for a three-day discussion of plant food technology scheduled to continue through Nov. 4.

Speakers on the first day's program included suppliers, fertilizer technical people, manufacturers of mixed fertilizers and a representative of the U.S. Department of Agriculture. The program also included a recording of the voice of Dr. Vincent Sauchelli, now on an assignment in India. Dr. Sauchelli,

one of the founders of the Round Table and its present chairman, greeted the group by pointing up the increasing importance of fertilizer technology and describing the Round Table as "a forum for operational personnel of the industry."

Joseph Reynolds, W. R. Grace & Co., Baltimore, was chairman of the morning session, and in his opening remarks added some additional information about the history of the sessions.

A paper prepared for the Round Table by I. M. LeBaron, International Minerals & Chemical Corp., was delivered by Jim Engelbus, IMC, in the absence of Mr. LeBaron. As the lead-off address, the paper told the story of phosphate, from mine to its application on the field. Photos were projected on the screen to illustrate the talk.

The paper described some of the problems in obtaining uniformity of product. "Phosphate must be taken where you find it," the speaker said. The only sure way of getting complete uniformity, he said, "would be to mine the entire Florida phosphate fields at one time." He also stated that for every pound of phosphate in fertilizer, 10 lb. have had to be handled by the producer.

(Turn to **ROUND TABLE**, page 23)

Survey Shows 41 States Now Allow Fertilizer-Pesticide Mixes

RICHMOND, VA.—Forty-one states now allow sales of fertilizer-pesticide mixtures according to a recent survey made by J. Clagget Jones, of the Virginia Department of Agriculture and Immigration, Richmond. Replies had been received from all except one state at the time of this report.

The following information is gleaned from the report made by Mr. Jones at the recent annual meetings of the Association of American

Fertilizer Control Officials and the American Association of Pesticide Control Officials in Washington, D.C.

Here are additional statistics on the status of fertilizer-pesticide mixtures in these states:

Of the forty-one states in which fertilizer-pesticide mixtures are sold, all but two register such mixtures under the state fertilizer law. All forty-one of the states collect the regular fertilizer fees and taxes in connection with the sales. All but one of the states replying have laws regulating pesticides and thirty-three register mixtures under the pesticide law. Of these thirty-three, thirty-one collect pesticide law fees.

According to the report, the pesticides most generally used with fertilizer mixtures appear to be aldrin, dieldrin, and heptachlor. However, in addition to the above, a number of other pesticides are also used. These include: Aldrin, boron, calcium arsenate, chlordane, DDT, 1,2-Dibromo, 3 Chloropropane, Disodium methyl arsonate, Nemagon, PCNB, phenyl mercuric acetate, phorate, potassium cyanate, Terrachlor, Thimet, 2,4-D and 2,4,5-T.

An increasing number of state experiment stations are recommending these mixtures, according to the report. Of those reporting, nineteen said that their state experiment station does recommend these mixtures, but an equal number indicated that their stations do not make recommendations for mixtures. Four of the states in which recommendations are made limit registration to such mixtures as recommended by the state. Comments (Turn to **MIXTURES**, page 24)

August Sulfur Output

WASHINGTON—Domestic production of 453,555 long tons of native sulfur and 61,185 tons of recovered sulfur during August, 1960, was reported by the Bureau of Mines, U.S. Department of the Interior.

Cotton Acreage Allotment Up 5%, Says USDA

WASHINGTON — Acreage allotment for upland cotton in 1961 amounts to 18,398,424 acres, announced the U.S. Department of Agriculture. Reserve for minimum allotments provides for an additional 60,000 acres.

The total amounts to a 5% increase over this year's allotment, including choice "B" acreage, of 17.5 million acres and 10% over the 1960 base allotment of 16 million acres.

The USDA set the allotment from a marketing quota of 15,562,000 bales of 500 lb. gross weight. The quota is made up of an estimated nine million running bales for domestic consumption and six million running bales for export, plus an upward adjustment of 500,000 bales to compensate for underplanting and the conservation reserve, and less imports of 60,000 bales.

Estimated yield per acre used in the acreage determination was 406 lb.

SELLING FEATURES INSIDE.....

MERCHANDISING MARKETING SECTION

Profitable 'Sideline' . . .

At the Hudson Seed House in Texarkana, Ark., seed is the main line, but "sideline" products of fertilizer and insecticides have been catching up fast. Jess Blair, Croplife's special writer, tells how the company did it . . .

Story on page 9

Cameras . . .

George P. Teel, Jr., gives detailed how-to-do-it information on putting your camera to work for the company. Where to start, what pictures to take and how to go about it are subjects covered . . .

Story on page 9



USDA STUDY SHOWS

Midwest Cooperatives Foresee Gain in Liquid Fertilizer Usage

WASHINGTON—Results of a study of liquid fertilizer distribution by selected cooperatives in the Midwest were announced in the current issue of "News for Farmer Cooperatives," a publication of the U.S. Department of Agriculture.

The study was made by Farmer Cooperative Service, and was reported in an article by B. H. Pentecost of that agency. Following is a condensation of Mr. Pentecost's article:

Of 17 local cooperatives operating in Kansas and Nebraska, 12 were distributing anhydrous ammonia during their 1958-59 operating year and 14 were handling 28 and 32% nitrogen solutions. Very little aqua ammonia, low-pressure nitrogen solutions or liquid mixed fertilizers were used in the areas studied during that time.

The information obtained in this study did not indicate any one type of liquid fertilizer was best, nor was it the purpose to advocate any one type or types. The study did, however, indicate that liquid fertilizers were gaining in importance.

Eight associations kept separate records of their sales of liquid fertilizer. Anhydrous ammonia represented 66% of their total fertilizer sales. The average volume per association was \$113,456 compared to \$170,428 for all fertilizers they sold.

Anhydrous ammonia accounted for 70% of all nitrogen fertilizer sold by six of the associations reporting. Most associations had been distributing the 28 and 32% nitrogen solutions less than a full operating year; therefore, volume data were not available. However, the general opinion of managers was that both types would increase in importance in the future.

Plant facilities necessary for distributing liquid fertilizers include bulk storage tanks and transfer equipment for moving the material from tank cars or truck carriers to these storage tanks and from them to farm delivery equipment. Also, if movable tanks are used, a hoist of some type is needed.

Bulk storage tanks for anhydrous ammonia ranged in size from 6,000 to 30,000 gallons. The minimum cost of a 30,000-gallon tank complete and ready to begin operations was approximately \$13,400 in 1959. If the association offered a delivery and application service, the total investment increased according to the number of nurse tanks (those for transporting liquid materials to farms) and applicators used.

Both 1,000-gallon and 500-gallon tanks were used for transporting anhydrous ammonia. The cost of 1,000-gallon tanks mounted on four-wheel trailers averaged approximately \$845. Without trailers the cost ranged from \$540 to \$600. The 500-gallon tanks cost from \$275 for the tank alone to \$550 for a tank mounted on a trailer.

Ten associations owned a total of 27 anhydrous ammonia applicators. They ranged in cost from \$350 for the tractor-mounted type to \$750 for a pull-type applicator and averaged \$610.

Nitrogen solution tanks were constructed of two types of material, aluminum and light steel. Sizes of bulk storage tanks ranged from 7,000 gallons to 23,000 gallons. The most common size, 22,000 gallons, of aluminum, ranged in cost from \$6,500 to \$7,105.

The cost of mild steel tanks, both storage and nurse tanks, was approximately half that of aluminum tanks of equal size. More aluminum nurse tanks were being used than steel ones at the time the survey was made. The cost of 1,000-gallon aluminum nurse tanks ranged from \$600 to \$800. Smaller 500-gallon tanks were from

\$1,000 to \$400, depending on quality of construction.

Thirteen of the 17 associations studied owned a total of 43 nitrogen solution applicators. Their cost ranged from \$275 for a trailer type applicator to \$1,700 for a self-propelled applicator.

Most of the anhydrous ammonia and nitrogen solutions were transported from bulk storage plants to patrons' farms by nurse tanks mounted on trailers designed for that purpose. Some materials, however, were moved by trucks or farm trailers in nurse tanks mounted on skids.

The cost to farmers for anhydrous ammonia varied from 6.7 to 9.8¢ a pound of nitrogen in the summer of 1959. The average gross margin for associations furnishing data was \$31,000 or 23% of sales. The average patronage refund paid was 16% of sales. On the average, 64% of the refunds were paid in cash.

The price of nitrogen solutions ranged from 10.2¢ a pound f.o.b. plant to 13.4¢ a pound of nitrogen delivered and applied. These prices were equivalent to \$57 to \$75 a ton for 28% solutions and to \$65 to \$86 a ton for 32% nitrogen solutions.

A breakdown of expenses for handling anhydrous ammonia was not available, but if the average rate of patronage refunds was the same as the rate of net savings, expenses averaged about 7% of sales in 1958-59.

Considerable variation existed among associations, however. Gross margins ranged from 18 to 27%, expenses from 1 to 10%, and patronage refunds from 12 to 18%.

In addition to purchasing liquid materials for patrons, most of the cooperatives also offered additional services related to liquid distribution. For farmers who did not own sufficient acreage to economically justify owning application equipment, some of the cooperatives in the study provided applicators and sometimes delivery tanks on a loan or rental basis.

Other associations provided custom services to patrons, applying both anhydrous ammonia and nitrogen solutions at reasonable rates. Eight associations provided a custom application service through private owners of equipment, generally referred to as "custom applicators," as a means of increasing services to patrons and improving their distribution systems.

Other services included soil sampling by eight associations; field personnel to assist farmers with application problems by nine, and keeping an inventory of common parts and hoses for farmers' equipment by 12 associations.

Six of nine associations handling both anhydrous ammonia and nitrogen solutions reported that their patrons preferred the former because of its lower cost. They indicated, however, that solutions were gaining in popularity because of their wider adaptability to soil conditions. Speed and ease of application and lower labor requirements were considered favorable factors influencing increased use of all liquids.

Managers of 13 associations expected farmers to use considerably more liquid nitrogen in the future. They also expected the number of distributors to increase.

Therefore 10 of the 17 associations were planning to expand facilities or to begin distributing both anhydrous ammonia and nitrogen solutions and possibly other types of liquids, if they were not already handling them.

Georgia County Launches Soil Fertility Program

WAYCROSS, GA.—A Soil Fertility Program was launched in Ware County recently with the purpose of increasing farm income by \$500,000 on four crops through proper fertilization and cultural methods.

The crops expected to bring in the additional farm income are cotton, corn, soybeans and pastures.

On hand at a meeting to explain how this soil fertility program can be carried out were agricultural extension specialists and fertilizer specialists. The program is being spearheaded by Tom Boland, county agent, the Chamber of Commerce agricultural committee and Farmers Mutual Exchange.

Charles McDonald, chairman of the board of directors of Farmers Mutual, was named chairman of the project with a battery of community leaders assigned to help push the program.

The soil fertility program outlined by P. J. Bergeaux of Athens, extension service soil and fertilizer specialist, and Frank Boyd, president of the soil fertility program and agronomist with the V-C Chemical Co., Montgomery, is a four-step project including soil testing, liming, using mixed fertilizer and nitrogen.

Soil testing to determine fertilizer needs of Ware County soil has been started. Soil testing stations are set up in each community to receive samples, which are to be sent to experiment stations for analysis and fertilizer recommendations.

New Mississippi Firm Holds Open House

MERIDIAN, MISS.—With its new plant approximately 75% complete, the Dixie Fertilizer Co., Inc., held open house ceremonies recently. According to company officials the plant will be in full production by Jan. 1.

The 50,000 sq. ft. plant will have a capacity of 120,000 tons of finished fertilizer annually. Sludge will comprise approximately 30% of the material used in the manufacture of organic fertilizer. Located on grounds adjacent to Meridian's new sewerage treatment plant, it will use waste material from the municipally operated plant.

Dixie will also manufacture superphosphate at an expected rate of about 20 tons an hour when in full production. Ground phosphate rock will be shipped from Florida and sulphuric acid from Birmingham and Atlanta. J. A. Hill is president of Dixie Fertilizer.



MARSHALL PETERSON (left), safety engineer of the National Safety Council, presents framed "Letter of Commendation" to Paul T. Truitt, president of the National Plant Food Institute, in token of Mr. Truitt's contributions to accident prevention in the fertilizer industry. The presentation to Mr. Truitt was made at the annual Safety Congress, at a meeting of the council's fertilizer section.

Grassland Crops Called Orphans at New Jersey Meeting

NEW BRUNSWICK, N.J.—Grassland crops were called "orphans . . . poor relatives . . . neglected ones" at the eighth annual grassland conference at Rutgers University's College of Agriculture Oct. 27.

Calling for action in giving increased attention to the growing of grasses and legumes was Francis A. Raymaley, forage specialist with the American Cyanamid Co., New York.

"A wide variety of our leadership gives lip service to grassland farming," said Mr. Raymaley, "but when application of fact is studied, precious little more than token treatment of the subject can be found in farming areas where it should be widely accepted."

"All of this can be true despite the fact that gearing the farm to grass is and can be profitable, practical and frequently an easier way than ignoring its advantages as we seem to do."

The speaker said he could see a real opportunity in gearing farms to grass in getting more of the poorer areas into grass and to do a better job on existing grasses.

"In such cases plant food and wise management can produce more protein and TDN per acre, and leave a better farm for the years ahead," Mr. Raymaley said.

Mr. Raymaley registered concern over the competition offered to this country's meat industry by grassland countries such as New Zealand. He said he thought it would be worthwhile to study the grassland farming methods that enable the New Zealanders to do this at a distance of 10,000 miles.

Alfalfa weevil, which moved into New Jersey and nearby states in 1952, remains a serious problem, according to Dr. Bailey B. Pepper, chairman of the department of entomology at Rutgers.

He referred to a "mild setback" in 1956 when chemical residue tolerances were set on materials that were effective against the weevil. Dr. Pepper said that he could not help but feel that the problem will be resolved by research.

Grasshopper Outbreaks Seen for Saskatchewan

REGINA—About 150 municipalities in Saskatchewan will be infested with grasshoppers next spring with six areas suffering "severe" and one "very severe" outbreak.

There is an increase in the areas expected to have "moderate" outbreaks compared to a year previous, according to the preliminary grasshopper forecast of the entomology section of the federal agricultural research station at Saskatoon.

The six areas of "severe" infestation center around Kincaid, Assiniboia, Holdfast and Torquay with one south of and another northwest of Weyburn. The small area of "very severe" infestation is northwest of Weyburn. The entire area of grasshopper infestation runs northwest in a broad band starting at the extreme southeast corner of the province and ending at the Alberta border near the Wilkie area. Much of the southwest corner of Saskatchewan is forecast as free of grasshoppers, as is northern Saskatchewan and all but the extreme southeast.

The preliminary forecast report says the "two-striped" and "roadside" grasshoppers predominate in the southeast and southcentral areas. "Roadside" grasshoppers also seem to be present in the southwest, west-central and central districts. The "stubble" grasshopper is present in all infested areas, but predominates in the northerly areas of infestation.

INDUSTRY PERSONNEL NEWS

Manager Transferred

ST. LOUIS — Gordon M. Robb, manager of the Bemis Bro. Bag Co. plant and sales division in Houston, Texas, was transferred to the company's Peoria, Ill., plant and paper mill, announced T. H. Ashton, director of central operations.



Gordon M. Robb

On Jan. 31, 1961, when L. J. Finn retires after close to a half century of service with Bemis, Mr. Robb will take his place as manager of the Peoria plant and paper mill.

Mr. Robb joined Bemis 43 years ago as an office boy in Houston. While working during the day, he completed his secondary education at night school and continued on with special courses in accounting, traffic and business administration at LaSalle Extension University in Houston and later attended the Institute for Management at Northwestern University in Evanston, Ill.

Consultant Appointed

PINE BLUFF, ARK.—Dr. Paul J. Talley has been appointed as agricultural chemicals consultant by the Planters Fertilizer & Soybean Co. of Pine Bluff. Bill Dunklin, this firm's director of fertilizer and insecticides sales, announced the appointment.

Dr. Talley will continue as the owner and manager of the Seark Seed Service in Pine Bluff where during the last two years he has directed a farm technical consultation service in the Pine Bluff area. But he will be always available for consultation by customers of the Planters company, the report said. Along with all types of fertilizers, the use of defoliant, herbicides and insecticides will be included in Dr. Talley's consultant program.

Witco Vice President

NEW YORK — The promotion of George F. Polzer to vice president in charge of purchasing, transportation and customer relations has been announced by Witco Chemical Co., Inc. Mr. Polzer will direct these activities for all of Witco's divisions, including Sonneborn Chemical & Refining Corp., Ultra Chemical Works, Inc., and Witco's tar products and Pioneer asphalt divisions. He will be located at Witco's executive offices in New York City.



George F. Polzer

Prior to his promotion, Mr. Polzer was executive vice president of Ultra Chemical Works, Inc., a wholly owned Witco subsidiary. He joined Witco in 1956 as director of purchases, and was formerly general purchasing agent for chemicals and raw materials with American Cyanamid Co.

Mr. Polzer holds a bachelor's degree in chemical engineering and a master's degree in chemistry from Cornell University.

Assistant Sales Director

SAVANNAH, GA.—Horace Forshee has been named assistant director of sales - agricultural, an-

nounced officials of Southern Nitrogen Co.



Horace Forshee

As assistant director of sales - agricultural, Mr. Forshee will be primarily interested in the sales of all forms of direct application nitrogen and will work closely with the sales staff at the dealer and small manufacturer levels.

Born and brought up on a farm in Worth County, Georgia, Mr. Forshee attended Abraham Baldwin Agricultural College. He spent three years in the farm equipment business before becoming district manager (East Georgia and South Carolina) for the Southeastern Liquid Fertilizer Co. in 1951. In 1958 he left SELFCO to join the sales department of Southern Nitrogen Co.

Three Salesmen Named

NORFOLK, VA.—F. S. Royster Guano Co., Norfolk, announced the appointment of three sales representatives.

Robert P. Mason will represent the company in eastern Illinois, succeeding Harold Silver. He will work out of the company's Indianapolis sales office.

Walter L. Demoise will cover southeastern Pennsylvania. Mr. Demoise, a new employee, replaces C. N. Bomberger and will work out of the Reading, Pa., office.

Ralph D. Johnson takes over the northwestern Ohio territory from James V. Wilson. Mr. Johnson will work out of Royster's Toledo sales office.

To Manage Omaha Sales

ST. LOUIS, MO.—L. A. Rowden has been named sales manager of the

Omaha sales division of Bemis Bro. Bag Co., announced S. D. Robey, manager of the Omaha plant and sales division.

Mr. Rowden, who joined Bemis in 1948 as an analyst in the company's market research department, has served during the past four years as a sales representative for the firm's San Francisco sales division. From 1952 to 1956, he was a factory representative for the Vancouver plant.

Advertising Manager

ST. LOUIS — An advertising and promotion manager and a marketing services manager have been appointed for Monsanto Chemical Co.'s recently formed agricultural chemicals division here, effective immediately.

Eugene D. Smith of El Dorado, Ark., will have responsibility for advertising and product promotion pro-

(Turn to PERSONNEL, page 25)

These men
guard
the quality
of your
fertilizer chemicals
from U.S.I.



BOB
DEITZ

RAY
KOLBESON

Many U.S.I. customers in the fertilizer industry know Bob Deitz and Ray Kolbeson. As chief and assistant chief chemists at our Tuscola, Ill., Plant Laboratory, their imprint is on each tank truck and car of U.S.I. fertilizer chemicals — ammonia, nitrogen solutions, sulfuric acid and phosphoric acid — shipped from Tuscola. They head a team responsible for the quality of all fertilizer chemicals made at Tuscola.

Yet these chemists do much more than simply provide the customer with an analysis of each shipment. They inspect plant production continually to help maintain the consistent quality customers require. And the analytical knowledge possessed by Bob, Ray and their colleagues is at the disposal of U.S.I. customers for all sorts of problems.

For example, they will perform special analyses for trace materials or uncommon constituents . . . will provide both standard and special test procedures. They have helped newcomers to the fertilizer business set up labs by providing advice on equipment, procedures, personnel. And they have carried out check analyses with customer labs.

Both men bring wide experience in the field to their jobs. Bob has been an industrial chemist for 20 years—three of them as a referee analyst in inorganic chemistry. He is now a member of the National Plant Food Institute's Task Force for Liquid Fertilizers. Ray numbers 12 years as a research and industrial chemist.

These men work for you as well as for us. A call to U.S.I. Heavy Chemical Sales in New York — OXford 7-0700 — can put them at your service.



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AMMONIA • NITROGEN SOLUTIONS • SULFURIC ACID • PHOSPHORIC ACID

FAO Team Visits Foreign Countries To View Fertilizer Situation, Potential

By Dr. Werner L. Nelson

Midwest Director
American Potash Institute
Lafayette, Ind.

EDITOR'S NOTE—Dr. Werner L. Nelson was agronomist of the six-man team. His report on the fertilizer situation in countries visited is of importance to the plant food industry in the U.S. Team leader was W. Klatt, economic adviser, H.M. Foreign Office, U.K. Other team members included T. H. Mather, Consolidated Mining and Smelting Co., Canada, trade and distribution specialist; S. K. Mukherjee, Sindri Fertilizers & Chemicals, Ltd., India, chemical engineer; N. Erus, FAO headquarters staff, statistician; and H. J. Page, FAO consultant in soil fertility and fertilizers, coordinating officer.

MARKETING of fertilizers abroad was an important consideration when a team of six specialists under auspices of the Food and Agriculture Organization of the United Nations visited a number of countries recently. Purpose of the team's activities was to consider present and potential fertilizer production, consumption, distribution and the factors influencing these matters.

As the group visited the various areas, a fertilizer liaison group was formed in each country to assist the team. Contacts were made with ministers, senior government officers, representatives of the fertilizer industry and villages, as well as various agencies and the International Cooperation Administration.

Attempts to analyze and guide future developments in most countries were hampered seriously because of a lack of reliable statistics on present fertilizer usage. Team members attempted to make estimates as to usage in 1963, but because of the many uncertainties involved, the estimates could be described more accurately as "guesses." The uncertainties lay largely in the area of profitability of fertilizer use, the degree of government participation in expansion programs, and the like.

Here are some of the factors and trends noted by the team: While the trend in Europe and North America is toward a 1:1:1 ratio, in the Asian and Far East region, primary interest is in nitrogen and as a whole, in 1956-59, the ratio was 1.0:0.24:0.20. The average annual rates of growth show that K₂O is increasing at a faster rate than is nitrogen in five of the seven countries, as indicated in the accompanying table.

	Average annual rate of growth in consumption, 1951-59		
	N	P ₂ O ₅	K ₂ O
	%	%	%
Ceylon	11	..	16
India	19	6	4
Indonesia	12	18	30
Malaya/Singapore ..	24	19	30
Pakistan	22	75	6
Philippines .....	..	..	12
Thailand	18	40	40

The consumption of fertilizer per hectare and per capita makes up another interesting statistic. Comparison of some of these countries with some of the more developed areas of the world, as shown in Table 2, show something of the potential. In Ceylon and Malaya, the relatively greater usage than other countries

in the region is due to the large area under plantation crops.

What are some of the factors impeding the use of fertilizers in these countries? Paramount in this area is a lack of distribution facilities, lack of price stability, lack of security of tenure, and a paucity of credit facilities, research facilities, extension services, demonstrations, and managerial skills, all of which tend to slow down fertilizer usage development. Limited but significant efforts are being made to remedy these problems in many of the countries, however.

Several of the countries are constructing now or are planning to build fertilizer plants as shown in Table 3. Most of such projects relate to the production of nitrogen fertilizers. Virtually all the rock phosphate and potash must be imported into these areas.

Here are recommendations made by the team for the countries where fertilizer use needs to be accelerated:

1. Soil test programs should be given high priority. India has 22 laboratories with more planned, the Philippines have 10 laboratories, and Thailand has a central laboratory. In Pakistan six laboratories are planned. In most of other countries little reliance is placed on soil tests. As in U.S. much work is needed on correlation.

An Indian soil test summary shows 91% of the soils medium or lower in N, 70% medium or lower in P₂O₅, and 64% medium or lower in K. About 18% are below pH 6.0.

2. Maintain a suitable balance between N, P₂O₅, and K₂O. The tendency has been to give more emphasis to N than to the other two nutrients. Response to phosphate is almost as general as to N, although it is often a matter of meeting nitrogen needs first. Response to potash has not been as general as to N and P. To secure adequate response to potash it is essential that enough N and P also be provided and that the tests be continued for several years. This has not been done in many experiments until recently.

3. Simple cultivator trials should receive increased support. Until recently fertilizer trials were confined to experimental stations. These stations were more fertile than surrounding farms and responses were low. In Bihar State in India Dr. H. N. Mukherjee adopted the use of simple trials on the farmers' fields. Between 1948 and 1958 over 35,000 trials were conducted. This technique is now being used in practically every country in the region. In India it was long believed that tropical soils did not respond to P or K, only N. This was proven false in cultivator trials.

4. Improved crop varieties must be developed. Special attention should be devoted to the breeding of crops capable of responding to heavier applications of fertilizer. In India and other countries visited, rice and other cereals are likely to lodge if N is applied at rates above 40 lb. an acre. On the other hand in Japan certain varieties of rice may give good return up to 100 lb. N an acre.

5. Experimental data on fertilizer responses should be summarized and printed fertilizer recommendations prepared. This has been done in a limited way in some countries. For example, in the Philippines ICA has prepared leaflets on corn and rice production methods, including fertilization. Consideration might well be given to developing two sets of recommendations, one to give maximum profit per acre, the other to give

maximum returns per unit of expenditure.

6. Demonstration programs should be expanded. This is of prime importance and should include land preparation, good seed, fertilizer use, water control, weeding and control of pests and diseases. In a cooperative program between the government of India and ICA, over 900,000 demonstrations have been conducted since 1954. In East Pakistan some 40,000 are under way. Demonstrations are one of the significant factors in the promotion of fertilizer use and fertilizers are often used as a leader to encourage the use of other good management practices.

7. Contributions by industry and trade. It is essential that both private and government manufacturing corporations participate in promotional activities. Some feel that too long the fertilizer industry has depended on the official extension agencies to promote fertilizer use.

8. An intensive engineering survey of the economic possibilities of fertilizer manufacture in the various countries should be made by an inter-

TABLE 2. Consumption of N+P₂O₅+K₂O Per Hectare of Arable Land and Per Capita, 1958

	kg/ha	kg per capita
Ceylon	32.0	5.0
India	1.5	0.6
Indonesia	2.3	0.5
Malaya/Singapore ..	12.0	13.0
Pakistan	0.5	0.1
Philippines	4.1	1.0
Thailand	1.0	0.4
Japan	246.0	14.0
Netherlands*	204.0	42.0
U. K.*	53.0	20.0
U. S.*	13.0	33.0

*Ratios per total agricultural land.

national agency. Such a survey would help to guide national policies, domestic and foreign businesses, international agencies, and foreign aid programs.

9. Domestic manufacture vs. imports of fertilizer must be carefully considered. For example, in a country such as India processed phosphate is much cheaper to import than to manufacture. Too, available fuel for nitrogen fixation has a significant effect on cost of N production.

10. A fertilizer control law should be introduced into each country to protect both the farmer and the legitimate fertilizer industry. In some countries there is a hesitancy to sug-

TABLE 1. Present and Future Consumption of N, P₂O₅, and K₂O (Tons)

Country	N		P ₂ O ₅		K ₂ O		Estimates for 1963		
	Average for 1956-59		Average for 1956-59		Average for 1956-59		N	P ₂ O ₅	K ₂ O
Ceylon	25,921	8,559	26,962	45,000	20,000	35,000	45,000	20,000	35,000
India	163,481	18,083	9,290	800,000*	350,000*	130,000*	800,000*	350,000*	130,000*
Indonesia	25,312	13,796	3,781	35,000	30,000	15,000	35,000	30,000	15,000
Malaya-Singapore ..	16,174	15,772	6,460	35,000	35,000	12,500	35,000	35,000	12,500
Pakistan	19,078	1,112	117	40,000	5,000	2,503	40,000	5,000	2,503
Philippines	19,618	7,162	6,314	30,000	11,000	14,000	30,000	11,000	14,000
Thailand	5,060	1,885	676	15,000	15,000	5,500	15,000	15,000	5,500

*It was particularly difficult to make an estimate for India. Hence the official government estimate rather than the team estimate is given. This is based on Third Plan food grain targets. Fertilizer usage in India has accelerated in recent years and the goal may possibly be reached. However, the team emphasizes that much extra effort by the government will be essential.

TABLE 3. Capacities for N and P₂O₅ Production—Installed or Projected

Country	Installed capacity, 1958		Under construction, capacity		Approved and due for construction, capacity		Total installed or approved, capacity		Teams estimate of production in 1963	
	—1,000 tons—		—1,000 tons—		—1,000 tons—		—1,000 tons—		—1,000 tons—	
	N	P ₂ O ₅	N	P ₂ O ₅	N	P ₂ O ₅	N	P ₂ O ₅	N	P ₂ O ₅
India	85	50	355	7	210	115	650	172	300	75
Indonesia .....	..	2	..	..	45	2	45	4	20	2
Pakistan	10	1	100	..	..	..	110	1	100	1
Philippines	10	9	..	..	..	..	10	9	10	9



FAO fertilizer survey team (left to right), W. L. Nelson, agronomist, American Potash Institute; W. Klatt, economist, U.K. Foreign Office; N. Erus, statistician, FAO; T. H. Mather, trade and distribution specialist, Consolidated Mining & Smelting Co., and S. K. Mukherjee, chemical engineer, Sindri Fertilizers & Chemicals, Ltd.

gest mixed fertilizers because of the possibility of adulteration.

11. The establishment of a Fertilizer Standing Committee on a national or a district level is desirable. In India such a committee has been extremely helpful in coordinating policy and activities in the supply, marketing, distribution and use of fertilizers.

12. Means of extending credit need much study. The perennial problem of lack of credit combined with high interest charges continues to be a major obstacle. A solution to this problem is crucial to the further expansion in fertilizer use. In this connection it is worth drawing attention to the system in operation in Taiwan where fertilizers are advanced through distribution agencies on the condition that payment be made in rice at a fixed ratio, after harvest.

The report of the FAO fertilizer team is based on a preliminary report of the survey of "The Fertilizer Economy of the Asia and Far East Region" by Food and Agriculture Organization of the United Nations, Rome, 1960.

Brockville Nitrogen Plant on Schedule

MONTREAL—Construction of the \$17,000,000 nitrogen chemicals plant of Brockville Chemicals, Ltd., near Maitland, Ontario, is proceeding on schedule. Production of anhydrous ammonia, ammonium nitrate and nitrogen solutions is scheduled to begin in May, 1961.

Sogemines, Ltd., Montreal, formed Brockville Chemicals, Ltd., last year. Sogemines, Ltd., is the Canadian subsidiary of Societe Generale de Belgique.

Brockville has announced that H. J. Baker & Bro., Inc., New York, has been appointed distributor for anhydrous ammonia, ammonium nitrate and nitrogen solutions to the U.S. fertilizer industry and H. J. Baker & Bro. (Canada), Ltd., Montreal, as distributor in Canada.

Four Illinois Fertilizer, Seed Meetings Scheduled

URBANA, ILL.—The University of Illinois Department of Agronomy and the Illinois Seed Dealers Assn. have scheduled four clinics exclusively for seed and fertilizer dealers. Designed to report the latest developments in crops and soils, the meetings are located to enable dealers in any part of the state to attend without driving an extremely long distance.

Here is the list of speakers and their topics:

M. P. Britton, extension plant pathologist, will report on diseases of field crops and lawns. E. L. Knake, extension weed specialist, will discuss latest findings in weed control. J. V. Baird, extension soils specialist, will discuss physical properties and good soil management. W. O. Scott, crops specialist, will give the latest crop variety recommendations and tell about new varieties.

All meetings will run from 1:15 p.m. to 8:30 p.m. Dates and places are as follows: Nov. 14, Country Club, Vandalia; Nov. 15, Student Prince Cafe, Macomb; Nov. 16, Lincoln Manor Restaurant, Dixon; and Nov. 17, Urbana Country Club, Urbana.

Three Dealer Schools Scheduled for Kansas

MANHATTAN, KANSAS—A series of three fertilizer dealer-county agent training schools has been scheduled for southeastern Kansas. The schools will be held at Chanute on Nov. 30, at El Dorado on Dec. 1 and at Hutchinson on Dec. 2.

Included on the programs will be discussions on irrigated fertility trials, fertilizer-insecticide mixtures and how to apply them, fertilizer demonstrations and other pertinent subjects.

Future of Irrigation Farming in West Texas Doubtful; Water Table Falls 3 Ft. Yearly

LUBBOCK, TEXAS—The future of irrigation farming in West Texas appears more doubtful than ever before. The more than 35,000 irrigation wells have lowered the water table steadily, and in many sections wells are failing.

Surveys show that the underground water on the High Plains has dropped 46 ft. since 1937 and is going down at the rate of 3 ft. annually. In the Pecos region some wells have dropped 150 ft. since 1946.

The most serious aspect about the problem is that there is very little recharge. The High Plains is pumping about five million acre feet yearly, with 98% of this being used for irrigation. The other 2% is being pumped by the municipalities. The

re-charge from wet weather lakes is only about one-fiftieth as much as the pumping total, so the water table continues to drop.

Before irrigation came to the area, most of this land was in dryland farms. Cotton that made a third of a bale per acre in the erratic rainfall belt jumped to nearly two bales with plenty of irrigation water and fertilizer.

Authorities say that if the area is returned to dryland farming, fertilizer usage will drop sharply, yields will go down and the economic pattern of the area will be drastically changed.

Since irrigation began its big boom about 10 years ago, west Texas has become the leading grain sorghum area of the nation, and


ranks high in cotton. Vegetables have also become a major crop where water is plentiful.

The only solution in saving water seems to be in practicing water conservation, but since there is only scant recharge in this flat, treeless section, the eventual depletion of the underground supply seems almost certain. Many farmers with dwindling wells are already using water as a supplement to rainfall, and this could be the pattern that the area must follow in the future.

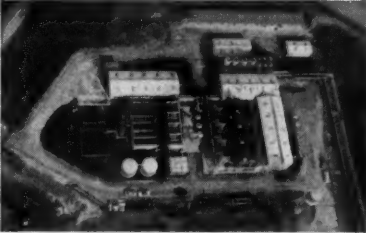

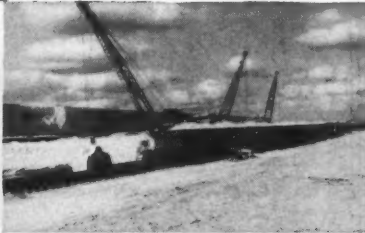



DIVIDEND DECLARED

LOS ANGELES—The board of directors of American Potash & Chemical Corp. declared a quarterly dividend of 30¢ a share on the common stock, \$1 a share on the \$4 cumulative preferred stock, series A, and \$1.25 a share on the special preferred stock. The dividends are payable Dec. 15 to stockholders of record Dec. 1, 1960.

S U L P H U R



POINTS OF DEPARTURE

<p>FANNETT, TEXAS</p> 	<p>MOSS BLUFF, TEXAS</p> 	<p>NEWGULF, TEXAS</p> 
<p>SPINDLETOP, TEXAS</p> 	<p>WORLAND, WYOMING</p> 	<p>OKOTOKS, ALBERTA</p> 

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In addition to these six producing properties, stocking and distribution centers are being set up, thus broadening the TGS Service to industry. Ample supplies of both molten and solid sulphur will be available at these centers. Cincinnati, the first of these units, is now in full operation.



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Physical and Chemical Aging of Soils Affects Fertility, Response to Fertilizer

COLUMBIA, MO. — The age of soils affects their fertility because they undergo physical and chemical changes over long periods of time, a University of Missouri scientist says. These changes also affect the soils' response to fertilizers.

Aging or soil development is slow and extends over hundreds of thousands of years, according to H. H. Krusekopf, professor emeritus of soils at the University of Missouri. Age in soils is not measured in years but by the maturity or degree of development of the soils profile. This includes the number and distinctness of the surface and subsoil layers to a depth of 3 to 4 feet.

Usually four stages of soil development are recognized: Young, immature, mature and old. A young soil has only slight variations in the profile and is slightly leached. An old soil may have many layers that contrast in color and texture, and are highly leached.

Immature and mature soils have

intermediate stages in profile development. Most Missouri soils belong in these two classes, Mr. Krusekopf says.

The many variations in maturity are a major reason for the many kinds of soils and the great differences in fertility. A mature soil will be entirely unlike a young soil, even if both are derived from the same soil-forming material.

Aging in soils consists in the gradual loss of calcium, magnesium and other more soluble elements, the soil specialist explains. Mineral particles continue to break down to form clay. The finest clay particles are moved downward by percolating water, so that with increasing age, subsoils contain more clay than the surface. This results in the development of the profile.

Soils that have reached maturity or old age tend to become compact, have poor structure or tilth, are less retentive of organic matter and moisture, and become more acid, especially in the subsoil. Release of

nutrients is slower and, in brief, the soils become less productive.

Young soils include most of the recent alluvial bottomland and some of the soils derived from thick loess in the northwestern part of Missouri.

Some alluvials as in the western part of the southeast lowland region, are relatively mature in development. Immature soils occur in all parts of the state, but are most extensive in the northwestern quarter.

Soils classified as mature are probably the most extensive group. Old soils, and those of advanced maturity, occur mainly on old land forms that have a relatively level surface. The Ozark region is an old land form. The oldest and most highly leached soils occur in the Ozark and southwestern prairie regions.

Less than 15 years ago most of the fertilizer used in Missouri was on relatively mature and moderately productive soils. Very little fertilizer was used in areas of young soils.

"One of the outstanding changes in soil management and in our concepts of soil fertility is the increased use of fertilizer on young and immature soils," Mr. Krusekopf says. "In fact, the greatest

expansion has been on this group of soils."

Until recent years, the use of fertilizer on the alluvial soils in southeastern Missouri was almost unknown. Now it is used in greater amounts than in other parts of the state. Use of fertilizer has almost become a standard practice on the relatively immature Corn Belt soils of northern Missouri, Iowa and Illinois.

The good response of the young and immature soils to fertilizer is attributed to their better structure, aeration and moisture properties, Mr. Krusekopf says. They are less acid. Moreover, the residual effect continues longer.

Old or mature soils require more frequent and generally larger amounts of fertilization. Maintaining the soil fertility is more difficult, and the use of the land is often restricted to grass and small grain.

Many variations in response to fertilizer can be attributed to differences in maturity of the soils. It is a soil condition not always recognized or understood according to the Missouri researcher.

Faulty interpretation of fertilizer results may be made if the soil age factor is not evaluated. Experience has shown that the fertility requirements to produce 100-bu. corn yields are less exacting on a young than on a mature soil.

Features indicating soil maturity are primary factors in soil classification. A classification, therefore, is an aid in interpreting and evaluating soil quality and land use. A better understanding of the degree of weathering is essential for a better understanding of soil fertility requirements and responses, Mr. Krusekopf says.

IMC President Predicts 5% Earnings Increase

NEW YORK—Earnings of International Minerals & Chemical Corp. should increase "in excess of 5%" over the 1959-60 figure despite a first quarter loss, shareholders were told at their recent annual meeting.

T. M. Ware, president, reporting a loss of \$655,000, or 32¢ per share on the 2,366,670 common shares outstanding for the quarter ended Sept. 30, 1960, said that costs resulting from Hurricane Donna and a wildcat strike were largely responsible for the drop in earnings from \$537,000, or 19¢ per share in the first quarter last year.

"Because of the seasonal nature of the fertilizer industry," Mr. Ware said, "profit margin is always lowest during the first quarter, even under normal conditions."

Mr. Ware said the outlook for increased earnings for the year was based on a "sound" sales situation, with demand equalling or exceeding productive capacity for three of the company's major products, triple superphosphate, phosphate rock and potash. Sales for the first quarter this year were \$23 million, up \$600,000 over the \$22.4 million total for the same period a year ago.

The company currently is developing a potash project in Saskatchewan and Mr. Ware said it was expected to be in production in fiscal 1961-62 and should make a major contribution to corporate profits in 1962-63.

Two new directors were elected at the meeting. They are John M. Budinger, New York bank official, and John T. Ryan, Pittsburgh industrialist. They replace Byron B. Ralston, attorney-at-law and engineer, who retired under IMC's maximum age provision for directors, and Arthur R. Cahill, former IMC vice president.

FORMER V-C MANAGER DIES

ROCHESTER, N.Y.—John J. Mulroney, 73, retired district manager of the Virginia-Carolina Chemical Corp., died recently. Mr. Mulroney retired four years ago after 42 years with the chemical firm.

Books on Pesticides

THE GARDENER'S BUG BOOK (1956)

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound \$7.50

HANDBOOK OF AGRICULTURAL CHEMICALS—Second Edition

Lester W. Hanna, Agricultural Enterprises, Forest Grove, Ore.

As the title implies, this book contains broad information and tables on not only the chemical products themselves, but also on toxicity, residues, registration, terminology and emergency treatments. A fold-out chart gives compatibility data on numerous materials for formulators. Information on fertilizers includes soil elements, trace minerals, and application techniques. Descriptive material is also presented on fumigants, fungicides, herbicides, systemics, growth modifiers, livestock chemicals, rodenticides, and antibiotics. Information on materials and techniques is written fully with illustrations and tables. 490 pages..... \$5.95

INSECT PESTS OF FARM, GARDEN and ORCHARD—Fifth Edition (1956)

Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages \$8.50

DDT and NEWER PERSISTENT INSECTICIDES

T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatibility of DDT with other insecticides, fungicides and additions are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations \$8.50

CHEMICAL AND NATURAL CONTROL OF PESTS

Dr. E. R. de Ong, Consulting Entomologist and Agricultural Technologist

The book presents a well-rounded, scientifically sound analysis of the most effective methods of pest control. Although the author emphasizes the importance of control by natural forces, he shows that nature unaided by chemistry cannot provide the required degree of extermination. At the same time, the book gives an accurate picture of the potentialities and limitations of pesticides. Material is integrated on the effects of weather, parasites, predators and resistance plants with the latest developments in pesticides. This book will provide the manufacturer, research worker, instructor and dealer with the background he requires to make an intelligent evaluation of the methods of pest control best suited for his particular purpose. 240 pages, cloth bound, illustrated \$7.50

METHODS OF TESTING CHEMICALS ON INSECTS—Vol. I

Harold H. Shepard, chief, Agricultural Chemicals Staff, Commodity Stabilization Service, U.S. Department of Agriculture, Washington, D.C.

This is Vol. I of a proposed three-volume study. It describes methods of studying the effects of chemicals on the physiology of insects. Also covered are general techniques for applying chemicals to insects. It includes laboratory screening methods for determining the killing efficiency of insecticidal sprays, dusts and fumigants. Its 14 chapters are authored by prominent entomologists from USDA and State Experiment Stations. 355 pages; 8½x5½" photo-offset, cloth bound \$5.00

THE CHEMISTRY AND ACTION OF INSECTICIDES

Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides illustrative data in form of tables, and a convenient appendix of equivalents are arranged for practical use in the field. 504 pages \$10.50

ADVANCES IN PEST CONTROL RESEARCH—Vol. 2

Edited by R. L. Metcalf, University of California, Citrus Experiment Station, Riverside, Cal.

This book, an annual series, treats pest control as a distinct discipline, discussing chemical, physical and biological methods from the common viewpoint of the basic principles involved and applying them to the control of weeds, fungi, bacteria, insects—all organisms which compete with man for his food supply, damage his possessions, or attack his person. Each annual volume contains chapters contributed by outstanding scientists having intimate knowledge of various pertinent topics within the field, presenting not only comprehensive reviews of recent advances but also critical evaluation of new developments and concepts. This volume continues the same plan which won immediate acceptance for the series. In eight chapters, a group of experts present and interpret recent advances in subjects ranging from the innate toxicity of fungicides to isotope dilution techniques and the spread of insecticide resistance. 1958; 434 pages, 110 illustrations, 43 tables \$12.50

INSECT, FUNGUS AND WEED CONTROL

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful \$10.00

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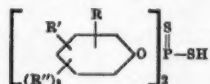
PATENTS and TRADEMARKS

2,957,801

Pest Control Method. Patent issued Oct. 25, 1960, to Gail H. Birum, Dayton, Ohio, assignor to Monsanto Chemical Co., St. Louis, Mo. A method for controlling bacteria and fungi which includes the step of applying to matter subject to infestation and attack by these organisms a toxic concentration of the residue obtained by chlorination of trithiane by heating with thionyl chloride under substantially anhydrous conditions to introduce from one to three moles of chlorine per mole of trithiane and removing from the resulting product material boiling below 128° C./20 mm. of Hg pressure.

2,956,921

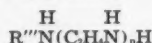
Nematocidal Polyamine Salts of Phosphorothioic Acids. Patent issued Oct. 18, 1960, to Philip H. Santmyer, Florissant, Mo., and Joseph W. Baker, Nitro, W.Va., assignors to Monsanto Chemical Co., St. Louis, Mo. The method of destroying nematodes in nematode infested agricultural soils which comprises contacting the said organisms with an addition salt of an acid possessing the structure



R, R' and (R''), representing the 5 substituents on the carbon atoms of the phenyl radical, where R is selected from the group consisting of chlorine and bromine, R' is selected from the group consisting of chlorine, bromine, hydrogen, lower alkyl and phenyl, R'' is selected from the group consisting of chlorine, bromine, hydrogen and combinations thereof and wherein the salt forming constituent is a polyamine selected from the group consisting of unsubstituted alkylenepolyamines of the structure



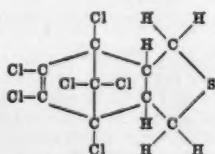
where n represents an integer of 1-4 inclusive and polyamines substituted by an acyclic radical selected from the alkyl and monoolefinic series, said substituted polyamine being selected from the group consisting of acyclic imidazolines containing an acyclic substituent of 8-22 carbon atoms on one of the positions 1- and 2-, acyclic tetrahydropyrimidines containing an acyclic substituent of 8-22 carbon atoms on the carbon atom joining the nitrogen atoms and alkylenepolyamines of the structure



where R''' represents an acyclic radical containing 6-22 carbon atoms and n has the same meaning as before.

2,957,802

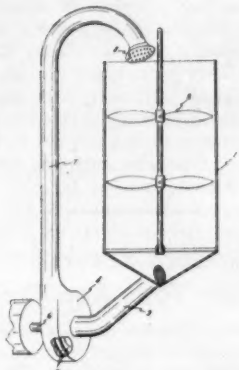
Methanolisothianaphthene Derivative. Patent issued Oct. 25, 1960, to Erhard J. Prill, Dayton, Ohio, assignor to Monsanto Chemical Co., St. Louis, Mo. The method of destroying insect pests which comprises applying to said insects an insecticidal quantity of 4,5,6,7,8,8-hexachloro-3A, 4,7,7A-tetrahydro-4,7-methanolisothianaphthene of the structure



2,957,803

Method of Preparing Suspensions of Insecticides. Patent issued to Verle

W. Woods, Crop King Co., P.O. Box 574, Yakima, Wash.



A method of forming a stable suspension of non-water soluble organic pesticide solids in water which comprises forming a liquid emulsion of fat in a water-urea solution, introducing the solids into the liquid emulsion and then breaking up the solids in the liquid to particles of a fineness of the order to 5 microns while agitating the liquid and solids together.

2,956,922

Protection of Growing Plants. Patent issued Oct. 18, 1960, to John D. Garber, Cranford, and Harrold C. Reynolds, Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J. A composition useful for the protection of plants against infectious organisms upon dilution with an inert carrier that comprises a dry blend of streptomycin and a clay selected from the group consisting of kaolins, illites, attapulgites, pyrophyllites, sub-bentonites and diatomaceous earth and containing from 1 to 20 parts by weight of clay per part of streptomycin.

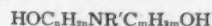
2,955,929

Weed Killers. Patent issued Oct. 11, 1960, to David Ramey, William J. Hughes and Johannes Van Overbeek, Modesto, Cal., assignors to Shell Oil Co. A method for the destruction of weeds comprising treating the locus of weed infestation with an herbicidally effective amount of a trinitroxylen compound having as one substituent a secondary alkyl group of up to 10 carbon atoms.

2,957,850

Phenol Salts of Polyesteramines and Their Use As Fungicides or Rodent Repellents. Patent issued Oct. 25,

1960, to James L. Jezl, Swarthmore, Pa., assignor to Sun Oil Co., Philadelphia. Process for preparing a fungicide which comprises contacting a fungicidal halophenol with a polyesteramine obtained by reacting, in proportions to obtain a polyesteramine, an alkanolamine having the formula



where m and n are integers from 2 to 4, and where R' is a monovalent radical selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms, hydroxyalkyl radicals having 1 to 4 carbon atoms, and esterification products of said hydroxyalkyl radicals with a monocarboxylic acid selected from the group consisting of naturally occurring fatty acids, rosin acids, and naphthenic acids, with a compound having the formula HOOCROOH where R is selected from the group consisting of alkylene and arylene radicals having not more than 10 carbon atoms, heating the resulting mixture to evolve at least about 1.35 moles of water per mole of alkanolamine and to avoid the formation of infusible polymers, the amount of halophenol being sufficient to neutralize at least one nitrogen atom of the polyesteramine molecule.

2,957,798

Production of Dispersible Sulfur-Containing Products Suitable for the Purpose of Plant Protection. Patent issued Oct. 25, 1960, to William Hennicke, Mannheim-Fuedenheim, Germany, assignor to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany. A process for the production of dispersible sulfur-containing products suitable for plant protection purposes and having a floating value of at least 36 which comprises mixing crystalline sulfur and dispersible sulfur in such a ratio that the crystalline sulfur amounts to at most 80 percent by weight of the total sulfur and subjecting this mixture to a dry grinding in one of a pin mill and a jet mill.

2,957,799

Alkyl Sulfoxide Compounds for Insect Combating and Method. Patent issued Oct. 25, 1960, to Lyle D. Goodhue, Roy E. Stansbury and Rector P. Louthan, Bartlesville, Okla., assignors to Phillips Petroleum Co. A method of combating an insect which comprises applying to the place at which said insect is to be combated a composition containing 0.25 to 15% by weight of the total composition of a compound having the following structural characteristics:



wherein R₁ is an n-alkyl radical having 1-12 carbon atoms, R₂ is a radical selected from the group consisting of n- and secondary alkyl radicals having 1-8 carbon atoms and wherein the

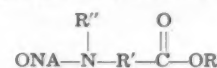
total carbon atoms in R₁ and R₂ are in the range 7-13 inclusive, the said compound being suspended in an insect-combating adjuvant.

2,957,762

Non-Corrosive Ammoniacal Ammonium Salt Solutions. Patent issued Oct. 25, 1960, to Donald C. Young, Fullerton, Cal., assignor to Collier Carbon & Chemical Corp. In a process wherein an aqueous ammoniacal solution consisting of an ammonium salt of a strong mineral acid and free ammonia which is normally corrosive with respect to ferrous metals is maintained in contact with a ferrous metal, the method of inhibiting the corrosive action of said solution on said metal which comprises incorporating in said solution a water-soluble stable ammine complex salt of a metal selected from the class consisting of the metals of groups, Ib, IIb, VIa and VIII of the periodic system, said metal-ammine salt being provided in an amount sufficient to decrease substantially the rate of said corrosion.

2,955,978

Esters of Nitrosoarylaminoacids. Patent issued Oct. 11, 1960, to John J. D'Amico, Nitro, W.Va., and Ching C. Tung, Kirkwood, Mo., assignors to Monsanto Chemical Co., St. Louis, Mo. The method of destroying fungi in soil which comprises applying to the soil in quantity sufficient to destroy fungal organisms causing disease a compound of the structure



where ONA represents a nitroso substituted aryl radical selected from the group consisting of phenyl, naphthyl and meta-substituted phenyl wherein the substituent is selected from the group consisting of chloro, bromo, lower alkyl, nitro and hydroxy, R represents lower alkyl, R' represents an alkylene group separating the nitrogen and carbonyl by two carbon atoms and R'' is selected from a group consisting of hydrogen and nitroso.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

Shell N-Sol, in capital letters, for fertilizer. Filed Sept. 1, 1959, by Shell Oil Co., New York. First use April 6, 1959.

Bioferm, in capital letters, for preparations for use in the treatment of insects. Filed May 1, 1959, by Bioferm Corp., Wasco, Cal. First use Dec. 26, 1958.

Kall, in hand-drawn letters, for herbicides. Filed Dec. 7, 1959, by Amchem Products, Inc., Ambler, Pa. First use Nov. 20, 1959.

Ant Diner, in capital letters, for ant-killing insecticides. Filed May 2, 1960, by the Sterling Co., Inc., St. Louis, Mo. First use March 10, 1960.

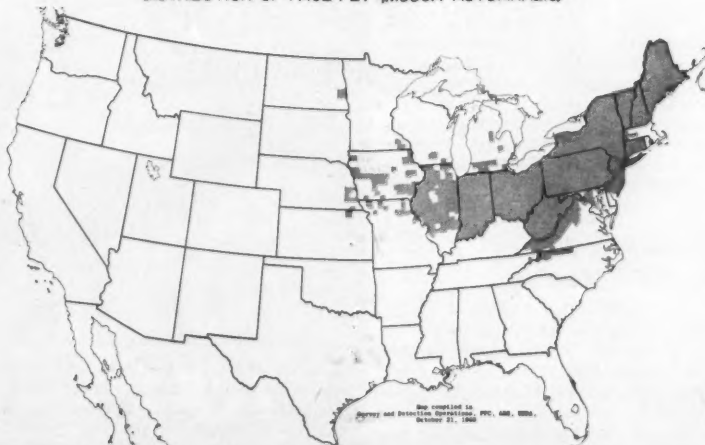
No Crab, in hand-drawn letters, for chemical preparation useful in exterminating weeds. Filed Feb. 23, 1960, by Amchem Products, Inc., Ambler, Pa. First use Jan. 26, 1960.

Kode, in capital letters, for insecticide. Filed April 5, 1960, by The O. M. Scott & Sons Co., Marysville, Ohio. First use March 10, 1960.

Terragro, in capital letters, for soil conditioner and fertilizer. Filed Feb. 20, 1958, by Zonolite Co., Chicago. First use Sept. 30, 1952.

Alki-mem, in capital letters, for mixtures of minor plant-food elements. Filed Nov. 20, 1959, by International Minerals & Chemical Corp., Skokie, Ill. First use Sept. 24, 1959.

DISTRIBUTION OF FACE FLY (MUSCA AUTUMNALIS)



FACE FLY AREA—Above map, prepared by the survey and detection operations of Agricultural Research Administration, USDA, shows the main areas of face fly infestation in the U.S. This livestock pest (*Musca autumnalis*), has made considerable headway during the past year.

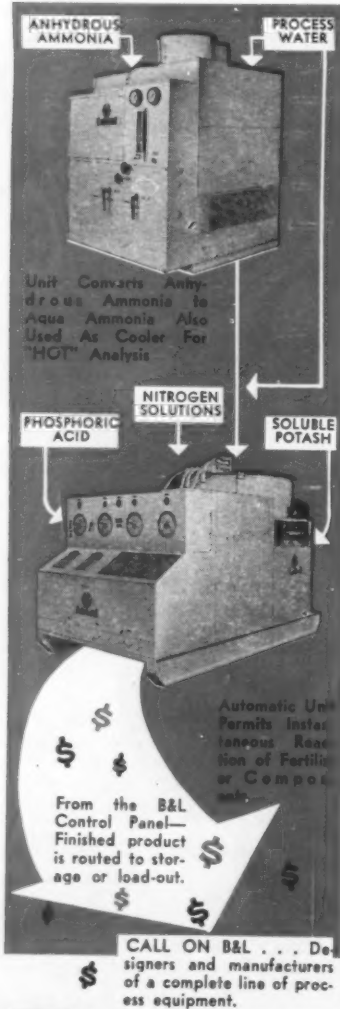


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CHEMICAL PLANTS DIVISION
BARNARD & LEAS
Manufacturing Company INC.

1302 Twelfth Street S.W. Cedar Rapids, Iowa

Inorganic Chemicals Show General Rise

WASHINGTON — The August, 1960, production levels for industrially important inorganic chemicals in the U.S. were generally higher than those reported for July and for August of last year, according to the Bureau of the Census, U.S. Department of Commerce.

Of those chemicals important to Croplife readers, nearly all showed gains over the previous month and the corresponding month last year.

Synthetic anhydrous ammonia production was 380,339 short tons, compared with 382,292 tons for July and 343,426 tons for August, 1959.

Output of ammonium nitrate was 236,459 short tons, some 17,563 tons more than July and 7,483 tons more than August of last year.

Ammonium sulfate production of 63,906 tons was higher than July but substantially lower than August, 1959, output of 92,162 tons.

Nitrogen solution production was 50,697 tons, compared with 44,414 tons for July and 48,530 tons for August of 1959.

August production of nitric acid was also up at 255,250 tons, compared with 242,362 tons for July and 241,828 tons for August last year.

Phosphoric acid output of 184,239 tons was substantially higher than both July and August, 1959.

Sulfuric acid production was 1,497,201 tons compared with 1,336,027 tons for July and 1,324,293 tons for August of 1959.

Dow Opens New Research Center

MIDLAND, MICH.—The new agricultural chemical research center at the Dow Chemical Co. was formally opened here recently.

More than 120 educators and research men from agricultural colleges, federal government agencies and commercial organizations toured the facilities. Along with Dow agricultural scientists, they also attended a dedicatory banquet.

The new center will house all activities related to agricultural chemicals research at Midland. The building provides more than 50,000 sq. ft. of laboratory and office space in addition to greenhouses and service buildings. The center is located on a 110-acre farm dotted with field test plots, animal barns and corrals, an orchard and woody plant nursery. Facilities have been installed for research on domestic animals and poultry.

The new facility is a major operational unit as well as headquarters for Dow's agricultural research facilities, including the Texas division laboratory at Lake Jackson, the western division laboratory at Seal Beach, Cal., and research field stations in Florida, Mississippi, northern California and Michigan.

The center will serve as a collecting center for information necessary to register a product with federal and state agencies; a location for applied research on specific problems, and a location for the investigation of metabolism of agricultural chemical products, the identification of residues in foodstuffs and the precise analysis of residues.

Agronomy Society To Hold Meeting

CHICAGO—The American Society of Agronomy will hold its 1960 meeting in Chicago this year for the first time since 1940. The meeting will take place at the Morrison Hotel on Dec. 5-8.

One of the highlights of the program will be a joint meeting on "Soil Fertility, Fertilizers and Plant Nutrition," to be held in the hotel's grand ballroom on the morning of Dec. 5.

SNOWILIZER

Everyone knows about the advantages of fertilizer to the farmer, but not so many know about the advantages of fertilizer to the skiers.

A recent experimental application of fertilizer on snow in Canada succeeded in transforming soft melting snow into a hard packed snow surface. Within five minutes after application, the snow surface could withstand a man's weight. Temperatures during the experiment reached 38°.

Meanwhile, R. A. Keen, Kansas State University horticulturist, uses fertilizer to melt snow with good results. He says that enough snow water mixes with the soluble fertilizer to carry beneficial nutrients into the grass without burning it.

Iowa Corn Borers Double Year Ago Counts

AMES, IOWA—The average number of corn borers per 100 corn stalks in Iowa fields this fall is more than double the number reported at the same time last year, said Wilfred S. Craig, acting state entomologist.

He reported the average count for the state this fall is 114 borers in each 100 stalks as compared with only 50 last year. Biggest increase is in the northwest half of the state, where borer numbers run two to three times as large as last year. Counts in the southeast half of the state are about the same as last year, when counts throughout the state were the lowest since the borer survey began.

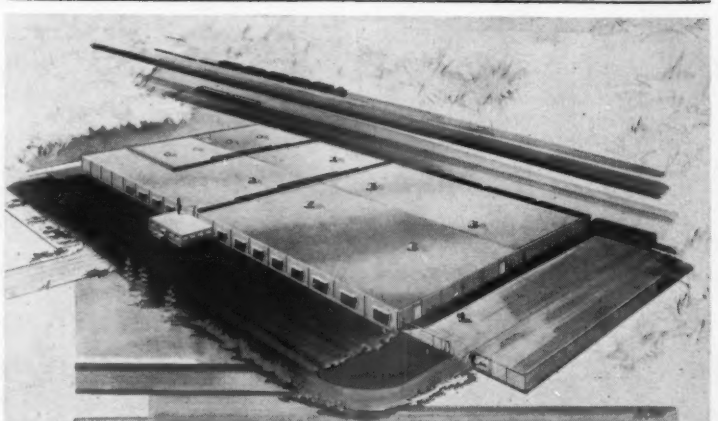
Mr. Craig said this increase is enough to be the basis of moderate infestation and damage next year. Weather between now and the 1961 planting time will have much to do with the numbers that overwinter.

F. S. Royster Guano Moves Division Offices

NORFOLK, VA.—F. S. Royster Guano Co.'s Norfolk sales division, which covers portions of Eastern North Carolina and Eastern Virginia, will occupy new quarters around mid-December.

K. C. Robinson, Royster's Norfolk sales division manager, announced the near-completion of a modern 1,800 sq. ft. sales office building just outside Royster's Money Point, Va., factory.

The Norfolk Sales Division has been located in the 14-story Royster Building in downtown Norfolk for nearly 50 years, along with the company home office.



A ONE-STORY concrete-block warehouse, containing 130,000 sq. ft. of floor space, including 3,000 sq. ft. of office space, is now being built at Bristol, Pa., for Rohm & Haas Co. The building was designed and is being constructed by George K. Heebner, Inc., of Philadelphia, at an estimated cost of \$800,000. Cost of construction of the warehouse itself (exclusive of site improvements) will be less than \$5 per sq. ft., including heating, lighting and sprinkler systems, the company says. The warehouse will be used primarily for the storage and shipment of finished products manufactured in Rohm & Haas Co.'s Bristol plant. It will help solve an acute storage problem, the company says.

PESTICIDES

(Continued from page 1)

\$198,236; Colombia, \$192,163; France, \$87,640; Cuba, \$72,828; all others, \$501,543.

DDT, formulations containing 75% or more (to 58 countries, value \$19,325,324)—India, \$10,136,268; Mexico, \$1,955,356; Columbia, \$1,300,312; Brazil, \$842,159; Indonesia, \$783,386; all others, \$4,307,843.

Benzene hexachloride (to 29 countries, value \$2,081,413)—Brazil, \$1,004,789; Mexico, \$389,779; Ceylon, \$149,496; Korea, \$86,226; Costa Rica, \$56,291; all others, \$394,832.

2,4-D and 2,4,5-T herbicides (to 50 countries, value \$2,665,317)—Canada, \$1,157,847; Venezuela, \$208,060; Cuba, \$197,836; Mexico, \$175,663; Union of South Africa, \$89,081; all others, \$836,830.

Herbicides, not elsewhere counted (to 66 countries, value \$4,049,706)—Canada, \$1,140,855; Netherlands, \$429,080; U.K., \$315,591; France, \$238,017; Mexico, \$193,168; all others, \$1,732,995.

Agricultural sulfur, not elsewhere counted (to 29 countries, value \$267,780)—Union of South Africa, \$82,596; Canada, \$29,931; Ceylon, \$25,237; Brazil, \$15,825; Lebanon, \$14,230; all others, \$99,961.

Organic phosphorus insecticides (to 76 countries, value \$7,980,008)—Japan, \$1,157,317; Australia, \$493,693; Mexico, \$437,133; Brazil, \$417,964; Belgian Congo, \$408,711; all others, \$5,065,190.

"Polychlor" insecticides, not elsewhere counted (to 79 countries, value \$16,068,859)—Egypt, \$3,360,987; Canada, \$1,934,453; Colombia, \$1,333,954; Indonesia, \$820,461; Mexico, \$764,931; all others, \$7,854,073.

Agricultural insecticides, not elsewhere counted (to 78 countries, value \$8,465,903)—Canada, \$752,441; Colombia, \$616,845; Nicaragua, \$586,095; Guatemala, \$414,892; Italy, \$411,917; all others, \$5,683,713.

Fungicides (to 73 countries, value \$8,034,630)—Canada, \$2,142,336; Brazil, \$939,819; Colombia, \$560,905; Union of South Africa, \$362,028; Cuba, \$321,076; all others, \$3,708,466.

Fumigants (to 46 countries, value \$1,065,030)—Mexico, \$216,315; Japan, \$176,480; French West Africa, \$130,203; Rhodesia, \$71,889; Canada, \$63,767; all others, \$406,376.

NEW DISTRIBUTOR

TORONTO—Brockville Chemicals, Ltd., has appointed H. J. Baker & Bro. (Canada), Ltd., of Montreal, as distributor for anhydrous ammonia, ammonium nitrate and nitrogen solutions to the Canadian fertilizer industry.

'Sideline' Products Add Up To One-third of Firm's Gross

By JESS BLAIR
Croplife Special Writer

At the Hudson Seed House, 203 E. Broad St., Texarkana, Ark., seed is the main item, but in recent years the sale of fertilizer and insecticides has been catching up fast.

"This last year we had a gross business of \$350,000," said James Hudson, owner, "and farm chemicals made up a third of it. Fertilizer sales were \$45,000, insecticides over \$50,000, and other things such as weed killers, rodent bait and grain bin fumigants made up the rest of it."

In the 11 years he has been in business, sales have increased steadily. Much of this has been brought about by promotion, but customer service and hard work have been mainly responsible.

"There is no increase of farmers," said Mr. Hudson, "so we try to sell each one a little more each year. In the spring we sell him field and garden seed and make our tie-in sales of fertilizer. This we deliver if he takes as much as two tons."

"After cultivation starts, we follow up with insecticides and weed killers. Then in the fall we have a spurt of legume seed business, and after that we start buying pecans. These are then sold to the sheller companies."

Mr. Hudson has been trying to add more off-season items each year, since the seed business is highly seasonal. He has enlarged his large farm store by putting in a full line of garden products, pet supplies and a small hardware department.

Since Broad St. is a main thoroughfare the store catches a lot of walk-in trade. To make the store more attractive, he has turned all the display management over to Mrs. Hudson and to Mrs. D. E. Harris, a sister-in-law. These ladies keep the items spotless, and like most women keep re-arranging things for the best effect.

"This really helps business," said the owner. "Many of our sidewalk customers won't buy more than 50¢ worth at one time, but it builds volume."

In selling farm chemicals, Mr. Hudson offers a soil testing service and sends samples to a college laboratory for analysis. He says there is no point in taking a sample unless the store manager follows it up with a

sales talk. Point out what the soil needs and get the farmer's order right then. By doing this, Mr. Hudson thinks he has more than doubled the amount of sales with these customers.

Another thing he keeps in mind is that not many farmers can keep abreast of all the technical changes in agriculture. Therefore he spends almost all his time in the store to meet farmers and discuss production problems with them.

"I worked hard to build up this business," he said, "and found out the best way to make sales was to help my customers. This means being able to give accurate advice, because two customers out of three have a problem. And the store owner who dismisses these questions or

(Turn to **ONE THIRD**, page 22)

THE HUDSON SEED HOUSE, Texarkana, Ark., has seed as its main line but in recent years fertilizer and insecticide sales have been catching up. In the photo above right, an employee loads a small fertilizer sale while the owner, James Hudson (left), tries to interest the customer in additional products (photo below).



Put Your Camera to Work for the Company

By GEORGE P. TEEL, JR.

Very few Croplife readers are without at least one camera. One good way to put these cameras to use is in selling crop growing commodities. It's the kind of a sales tool that a ledger-book manager such as Oscar Schoenfeld might consider a complete extravagance, but fellows like Pat, however, will find many opportunities to use photographs in building increased volume.

As an example, a salesman for a feed, seed and fertilizer store was given a Polaroid camera and has been getting real mileage from it ever since—in his business as well as at home.

This salesman began by using it as a goodwill tool. On sales calls, he would leave behind snapshots as a reminder of his friendly interest. The family pet, a topnotch field of corn, the farm house, a prize

heifer . . . almost everything has been fair game for his camera.

Building goodwill is a good place to start. Prospects will usually get some fun from your first efforts so don't be afraid of botching one or two in the beginning. Do take time, though, to familiarize yourself with the camera and its operation before setting out.

Photograph holders are a nice touch and are quite economical in moderate quantities. The photo slips into these holders which then serve as a stand-up frame. Your printer or photo supply store should be able to obtain them easily. For a few extra pennies, each can be imprinted with your firm's name.

Goodwill offerings are just an opener, however. Take a look at the publicity that can be built for your store with a camera. Getting

(Turn to **CAMERA**, page 11)

WHAT'S NEW

IN PRODUCTS • SERVICES • LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 6110—Polyethylene Storage Tanks

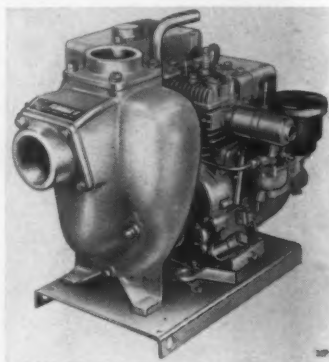
Delaware Barrel & Drum Co. announces the introduction of polyethylene storage tanks in 500 gal. capacity range. The molded units retain polyethylene characteristics, with particular emphasis being placed on permanent corrosion resistance, the company says. Several styles are available, including full open head,



closed head with openings, flat or conical bottoms. Access and drain fittings are available in wide choice, the company says. For more complete information, check No. 6110 on the coupon and mail.

No. 6105—Nitrogen Solution Pump

A pump for nitrogen solutions, made entirely of aluminum with stainless fittings, in 1½ in. and 2 in. sizes, is being manufactured by the Marine Products Co. The pumps have capacities of 100 and 140 GPM and feature flanges on both suction and discharge, an opening between the



engine and the pump to prevent solutions from contacting the engine and interchangeable parts on both models. In addition, the pump is entirely self-priming, the company says, with a built-in check valve to prevent siphoning. It is fitted with stainless steel studs, nuts, lockwashers and shaft of stainless steel with ceramic seal. For more information, check No. 6105 on the coupon and mail.

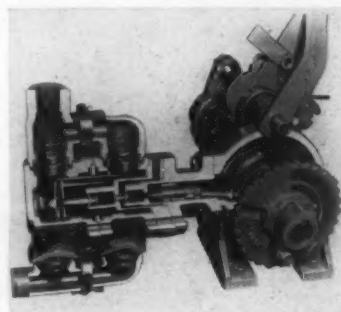
No. 6108—Light Hauling Unit

A bulletin about the Cushman 780 "Truckster" which is equipped with a Percival flatbed and stake racks, is available from Cushman Motors, subsidiary of Outboard Marine Corp. The bulletin illustrates and describes the unit designed for transporting low weight, high bulk materials. It also lists typical applications. Complete specifications and a cut-away view of the unit illustrate its con-

struction and give a listing of lighting, drive motor, suspension, clutch, transmission, differential and other construction characteristics. For copies of the bulletin, check No. 6108 on the coupon and mail.

No. 6106—Pump Valve

A new valve, which has been made standard equipment on several high pressure piston type pumps and liquid fertilizer pumps, is being manufactured by the John Blue Co., Inc. The valve stem is completely eliminated and the valve disc is floating. Thus, the company says, there can be no galling of the stem. Stainless steel parts eliminate composition rubber gaskets which are inclined to chip, stick and pick up trash, the company says. The valve is clog proof and the salting out of liquid fertilizers has



virtually no effect on the valve because there is no way the crystals can cause binding and sticking of the valve stem, the company says. For more information, check No. 6106 on the coupon and mail.

No. 6107—Mite Control Brochure

How to control mites in citrus crops is the subject of a brochure being offered by Niagara Chemical Division of Food Machinery & Chemical Corp. The brochure outlines recommended application procedures for "Tedian" miticide on oranges, grapefruit, tangelos, citrus citron, tangerines, limes and lemons. For copies of the brochure, check No. 6107 on the coupon and mail.

No. 6111—Truck Mounted Boom

Henderson Manufacturing Co. announces the "Chief" hydraulic truck mounted yard boom. According to the company the boom may be mounted



behind the cab of a truck measuring 60 in. or more from cab to rear axle. The boom itself consists of a telescoping cylinder that makes it pos-

sible to extend and retract the boom while it is fully loaded. Capacity is 6,000 lb. when retracted and 3,500 lb. when extended. The hydraulic system consists of a pump mounted under the truck and driven by the truck power takeoff. It pumps oil to a double valve located behind the cab. The valves are mounted on top of a reservoir which holds 5 gal. oil. For complete information, check No. 6111 on the coupon and mail.

No. 6109—Fork Lift Truck

Automatic Transportation Co. announces its "Transveyor Crab" truck. The truck has "Stereo-Matic" steering which permits traversing in any direction, at any angle and with any



shaped load, the company says. The steering and twin drive motors are operated by one control lever which provides forward and reverse turning without the use of the steering wheel. Angle and side steering will be controlled by the steering wheel. The truck is 65 in. long and can turn completely around in a 70 in. circle, the company says. Placing and positioning the load is accomplished by a reach-type fork attachment which in addition can swing the load 30° each side of center. For more information, check No. 6109 on the coupon and mail.

Four Speakers Featured On NPFI Radio Series

WASHINGTON — Four speakers will be featured in the National Plant Food Institute's twenty-seventh in the recorded Farm Radio News Service series, now being used by 1,250 stations, on request.

Speakers and their subjects for the current series are: Dr. Russell I. Thackrey, executive secretary, American Association of Land-Grant Colleges and State Universities, on: "What Does Your Land-Grant College Mean to You?"; Gordon K. Zimmerman, executive secretary, National Association Soil Conservation Districts, on: "Conservation Means Soil Fertility"; John H. Crocker, chairman, agricultural commission, American Bankers Assn., and president, the Citizens National Bank of Decatur, on: "A Soil Test Is to Your Credit," and Dr. Willard H. Garman, chief agronomist, NPFI, on: "Wise Farmers Plan Ahead."

Films Available

WASHINGTON — The American Potash Institute, Inc., announces the availability of a number of films concerning alfalfa. The master movie, "Growing Alfalfa Successfully," is a 25 min., 16 mm. film covering the value and uses of alfalfa, its origin and introduction into North America, soil and nutrient needs and cultural methods.

Two other shorter movies are exact duplications taken from the master film.

Information can be obtained by writing the Institute, 1102 16th St. N.W., Washington 6, D.C.

Send me information on the items marked:

- | | |
|--|--|
| <input type="checkbox"/> No. 6105—Nitrogen Solution Pump | <input type="checkbox"/> No. 6109—Fork Lift Truck |
| <input type="checkbox"/> No. 6106—Pump Valve | <input type="checkbox"/> No. 6110—Polyethylene Storage Tanks |
| <input type="checkbox"/> No. 6107—Mite Control Brochure | <input type="checkbox"/> No. 6111—Truck Mounted Boom |
| <input type="checkbox"/> No. 6108—Light Hauling Unit | |

(PLEASE PRINT OR TYPE)

COUPON NOT VALID AFTER 60 DAYS

NAME

COMPANY

ADDRESS

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS
PERMIT No. 2
(Sec. 34.9,
P. L. & R.)
MINNEAPOLIS,
MINN.

BUSINESS REPLY ENVELOPE

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67

Reader Service Dept.

Minneapolis 40, Minn.

CAMERA

(Continued from page 9)

your name in the paper, in the news columns, is a good goal to shoot for. It will add to the total effect of your advertising and promotion efforts.

Take, for example, an open house day, a field demonstration or a farmer meeting. In a home town paper or on the local page of a paper serving your area, each can be news.

In pictures taken at such affairs, people are the most important element. Make certain that yours are well stocked with human interest.

Identify each individual carefully, printing or typing the names and addresses before turning the story over to the paper. Even small inaccuracies will spoil the effect and value of an item.

If you have invited local "personalities" to the affair, be certain to highlight them in at least one photo. This will often help to make your story more acceptable to the editor and will aid in gaining higher readership.

When thinking of photos and publicity, don't overlook the possibilities offered in your business itself. Too often facilities are added, new men hired, new equipment is purchased or a new service is started without getting full mileage from the investment right at the start.

Each of these events is news and rates proper introduction to people of the area. With your photographs, again try to get people included with a building or a piece of equipment to increase the human interest element. In a new store, it might be your first customer, or the mayor cutting the red tape across the entrance on opening day; with a bulk depot, your first customer taking a load on his truck; show your new spreader on the field with the grower pointing to the field it will operate on; if it is a soil test lab, explaining the setup to a customer is a natural photo subject.

As a responsible community member, you probably spend several evenings each month attending Grange meetings, FFA dinners and similar events. If these are not already covered by a news reporter, it could be good relations for you to do so, at least help the secretary or publicity chairman of the organization. What better way than by offering pictures that will help publicize their activities?

This could be good public relations for you. You will be there anyway and it will only cost a roll of film to experiment.

There's additional mileage, too, in those goodwill photos we discussed earlier. A champion milker or bull, the top DHIA herd in your area, a 100 bu. plus corn crop—these have news value. Look for the opportunities to benefit from your goodwill efforts. Be sure, when you do, to make an extra print for the farmer. Delivering it will be good reason for a return sales call.

Store displays can be spiced up a great deal with your photos. You should make the best possible use of your display space.

Photographs are attention getters, whether pictures of a topnotch crop (with the grower), a weed control demonstration or your spreader in action. Tie them in wherever you can to add extra spark to your commodity displays. If the picture is really good, a large blow-up may make a good focal point for an entire display.

Testimonials may already play a part in your advertising program—newspaper ads, direct mail fliers, letters, etc. Here again, a picture is an attention getter that will increase readership.

Try it with the farmer who grew the best, or equal to the best, field of forage in your community this year. It will fit right in with the sale of goods as you promote the idea of feeding grasslands to get

them in shape for the winter and another season of productivity.

Some time ago, a series of "mystery farm" advertisements was run by a feed and fertilizer store. The owner picked farms in the community, sometimes a patron, often a grower who was not doing business with him.

He offered a moderate prize each week to the owner of the mystery farm, running a large picture of the homestead area in his weekly ad. The farmer called or visited the store to pick up his prize. It made a nice opening to be followed up with additional sales calls aimed at gaining his business.

A discussion like this would not be

complete without at least touching on color slides and photos—both can be valuable to you. With a miniature camera you can begin to build a slide file of your own for use in farm meetings or on the farm using a portable hand viewer.

They will also give you the material which will add local color to slide series available from many suppliers.

Color slides are particularly dramatic in showing comparisons—chemical weed control versus no control, low pH and proper liming, optimum fertilization compared to average for your area. You can think of many others.

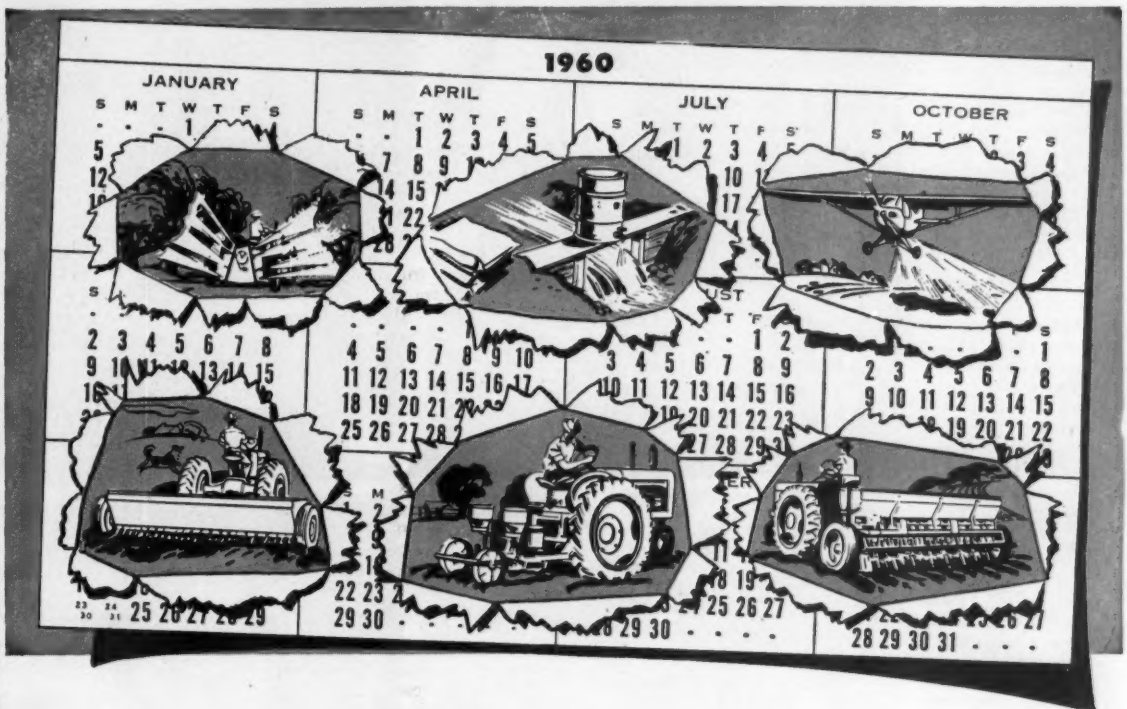
These are a few of the ways in which a camera can be a sales asset. Give it a try and see how photographs can help you in building volume . . . in gaining more awareness of your store and services . . . and in boosting goodwill.

Distributors Named

CEDAR RAPIDS, IOWA—Highway Equipment Co. announces three new distributors of its New Leader line of spreaders and blenders. They are: Happel & Sons, Inc., Cedar Rapids; Moline Body Co., Moline, Ill., and Montgomery Body & Trailer Manufacturing Co., Salem, Ill.

ENTOMOLOGIST NAMED

CLEMSON, S.C.—Herndon R. Agee, a native of Richmond, Ky., has joined the U.S. Department of Agriculture staff as entomologist at the Pee Dee Experiment Station in Florence, where he is working with the cotton investigation experiments underway at the station. Under the supervision of Dr. H. M. Taft, USDA leader of cotton insect investigations, Mr. Agee will study the nerve response of the boll weevil to various physical and chemical stimuli.



'Round the Calendar Profits Are Yours when you sell these 2 Grace Fertilizers

✓ Grace Urea Prills

When your customers require nitrogen in the solid form, you'll find it sound (and profitable) business to recommend Grace Urea Prills, *guaranteed 45% nitrogen*. This is a special free-flowing form of urea with *definitely superior* anti-leaching qualities—ideal whenever a solid nitrogen is preferred.

✓ Grace Agricultural Grade Crystal Urea

And Grace Agricultural Grade Crystal Urea is the *right* recommendation for foliar spraying, because this urea is *specially formulated* for foliar application. Its low biuret content (less than 0.2%) makes it safe; it is completely water soluble, won't clog spray equipment; and it is 46% nitrogen.



Team Up With **Grace**...and Profit!



Grace Chemical Company A Division of W. R. Grace & Co.

Memphis—147 Jefferson Ave., Jackson 7-4541 • Chicago—75 East Wacker, Franklin 2-4424
New York—7 Hanover Square, Digby 4-1200 • St. Louis—8230 Forsyth, Parkview 7-1715
Charlotte, N. C.—1402 East Morehead St., Franklin 6-3329

TV Watching, Radio Listening Contribute To Texas Dealer's Growing Insecticide Volume

By RUEL McDANIEL
Croplife Special Writer

Harry A. Wilson, owner of Wilson Feed & Farm Supply, El Campo, Texas, spends quite a lot of time listening to radio programs and watching television; but this does not necessarily mean that he is a "fan." It is a part of his business promotion.

Of the \$120,000 business volume done by this company last year, insecticides and pesticides contributed about 25% of it, or \$30,000. One reason for the volume, which is growing rapidly, is that Mr. Wilson makes a point of keeping up with what is being advertised over local and Houston radio stations and Houston television channels. When he learns, by his persistent checking of the programs, plus avid newspaper reading, that a new insecticide or pesticide is on the market, he doesn't wait until a customer comes in and asks for it nor for a salesman to come around and ask him to stock it. He orders a trial shipment of the new product at once.

"We have been watching and listening to advertising long enough until we know just about how much each radio and television station and the various metropolitan newspapers and national magazines pull in our territory," Mr. Wilson explains. "Thus when an advertising schedule starts on a certain radio station, for example, we know that people are going to start coming to our store pretty soon and asking for the insecticide advertised."

"By ordering at least a trial shipment at once, we generally are up to or a little ahead of demand; and thus when a customer comes in and inquires about a new product that she has seen or heard advertised and finds that we have it, she not only is pleased to be able to buy the product while it is on her mind but she is favorably impressed with our own awareness to what is new in the insecticide field. That helps to keep her coming back when she needs other such gardening aids."

Another factor that has contributed to the rapid growth of insecticide volume is the company's policy of companion selling. All insecticides, pesticides and other products are ar-



HARRY A. WILSON (above), owner of Wilson Feed & Farm Supply, El Campo, Texas, checks over his stock of insecticides and pesticides. Mr. Wilson tries to keep stocks on hand in advance of the call for them. In the lower photo, a young housewife purchases a package of garden seeds from George Schmersahl, salesman. Mr. Schmersahl will then recommend to her the proper pesticide to go with the flower growing.



ranged in the store to fit in with related merchandise, to make companion selling easier.

Instead of displaying all the various items in the line in an area of the store exclusively for them, they are grouped according to usage and displayed adjacent to other merchandise which may help to create a demand for the insecticides.

For example, garden and flower seeds are displayed and dispensed from an area apart from feeds and field seeds. Between the two displays of these seeds is an island fixture carrying insecticides and pesticides which logically are used to treat flowers and small garden plants.

Thus, when a woman buys a packet or two of a specific flower seed, the salesman reaches over to the pesticide display and takes a can of the product which is recommended either to condition the soil for the flowers or to fight pests after the flowers are up. He explains the use of the product and recommends it for best flower gardening results.

Pesticides and health products for baby chicks, for example, are displayed near a floor display of baby chick mash, so that it is logical and easy for the salesman waiting on the chick feed customer to recommend one or more of the various chick companion products.

"A comparatively few customers think to ask for these insecticides and soil aids when buying seeds, plants or feeds," Mr. Wilson stresses. "Thus by displaying the various lines in relation to more basic store lines, we are able to suggest the insecticides and pesticides without waste of our time or the customer's. This

arrangement has been an important factor in building our volume in these specialty lines. Not only does it make it easy to interest the customer, but the nearness of the pesticides also serves as a constant reminder for the salesman to suggest them as companion items to whatever the customer comes in to buy."

An increase in national advertising of pesticide, insecticide and fungicide items has created a greater awareness in the minds of the average home owner of the importance of proper soil and plant treatment for best gardening results, Mr. Wilson finds, and the farm store that will tie in with this growing awareness and be ready for the growing demand cannot help reaping additional profits.

Grub worms, for example, are a pest in the El Campo area, especially in wet seasons. Recently a woman living in town and the proud owner

of a yard that is famous locally for its flowering beauty, came in and said to Mr. Wilson, "Last night on television I saw an ad about a new poison to kill out grub worms. They're awful bad in my yard. I don't suppose you know what the product is?"

Mr. Wilson had seen a similar advertisement the week before. He not only knew what the product was, but he had it in stock. The customer was agreeably shocked. "Wait till I tell my friends about this," she volunteered. "They'll swamp you."

Within the city of El Campo and on the outskirts are a lot of so-called "weekend ranchers"—men with small suburban places on which they putter around with a few calves, hogs or chickens. These amateur "ranchers" are among the top prospects for insecticides and health products, Mr. Wilson finds. "They are, on an average, new at raising animals and they are alert for any suggestions

(Turn to TV WATCHING, page 22)

Kill Worthless Trees

Used by
U. S. Forest Service

THE RUELL LITTLE TREE INJECTOR

Makes it easy and economical to kill trees in timber, or kill worthless trees in pastures. Easy to use and carry, weighs only 11 lbs. No re-sprouts. Safe for livestock. No crop damage. Estimated cost, \$6 per acre. Sure kill every time. Results proven by years of use by U.S. Forest Service and farmers everywhere. Without obligation get the facts on this new tree killing method.

Write for Free Booklet
RUELL LITTLE TREE INJECTION CO.

Madill,
Okla.



November 1960 • 25 cents

Successful Farming



*Les Beler farm
Martin County, Minnesota*

Which fertilizer system for you?

By S. A. Barber and T. L. Wainscott
Purdue University

Today, you can buy fertilizer in dry, liquid, or gas forms. There are no less than 15 different carriers of N, P, and K, and 20 ratios of mixed fertilizer available. Add to this list the many different soil types on which fertilizer is applied, and the number of possible application combinations becomes endless.

The 3 outstanding fertilizer systems used around the country are presented here. They involve combinations of plow-down and row application. Forms of fertilizer and types of applicator shown are for illustration only; they should not be interpreted as preferable.

Plowing all the fertilizer down is a 4th method, not illustrated for obvious reasons. It is popular with corn growers who have large acreages and want to get the job out of the way. A small phosphate application, 10 pounds of P_2O_5 per acre applied with the planter, is sometimes used with this plow-down method. On some soils this small amount of row phosphate gets the corn off to a more uniform start for early cultivation.

Research on how plants use fertilizer now makes it possible to apply plant food more efficiently. The amounts of phosphate and potash going into a corn plant at 4 stages of growth are illustrated at right. Comparative amounts of plant food taken up from the row and from a plow-down application are shown by the arrows.

Phosphate from the row stimulates corn growth during the first month. This stimulation is greatest on soils low in available phosphate. However, phosphate in the row does not have much effect on soils which already test high or very high in phosphate. After the first month, corn uses large amounts from supplies plowed under, or from available phosphate already in the soil. Where large applications of phosphate (over 40 pounds P_2O_5 per acre) are used, plowing under all or most of it will usually result in higher yields than can be obtained by applying all the phosphate in the row.

Corn plants can get potash about equally well from row or plowed-down application throughout the growing season. Potash differs from phosphate in this respect. Potash applied in the row must be placed at least 2 inches to the side and 2 inches below the seed to avoid salt damage to the germinating seedling. In very dry seasons, plow-down potash may be more available than row potash.

There is probably no *one best method*. However, because today's fertilizer is of higher analysis, and we're using more of it per acre, there are definite advantages to planning a system on each farm. You can fertilize more efficiently and profitably with a good system. Your county agent and fertilizer dealers will help plan your system.

Three ways to apply your plant food.

1 Popular with farmers who apply plant food at optimum rates on soils low in potash, but high in phosphate. It was developed after research showed that corn germination and early seedling growth could be damaged by potash salt action.

The small amount of phosphate needed can all be applied in the row.

2 Widely used on soils already high in fertility as a "maintenance" program, or on low-fertility soils where you are only using up to 150 pounds per acre.

Nitrogen is plowed down, the other elements are applied in the row.

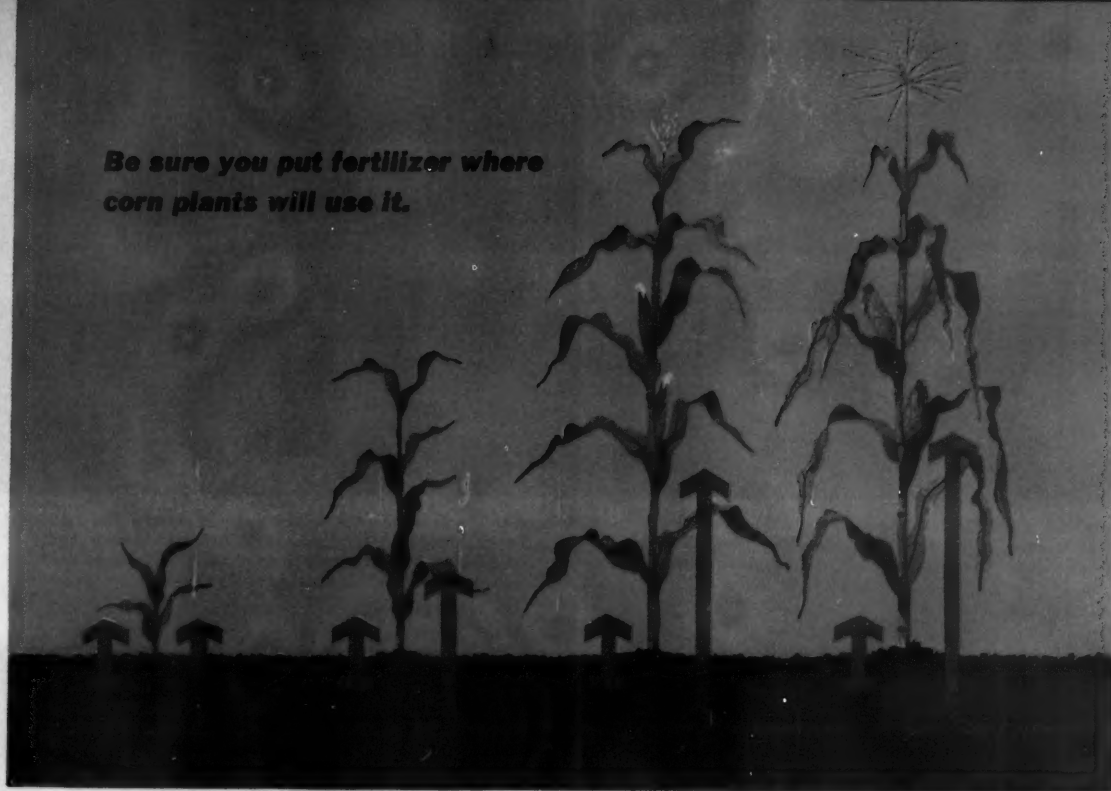
Higher rates increase labor, crop doesn't make best use of phosphate.

3 All the potash is applied as a band near the row. Minimizes the handicap imposed by certain soils which actually "tie up" potash so the plants cannot readily get it.

Since large amounts of phosphate are normally needed on these soils, broadcasting and plowing it under is an efficient way to handle it.

Drawings: Pearson

**Be sure you put fertilizer where
corn plants will use it.**



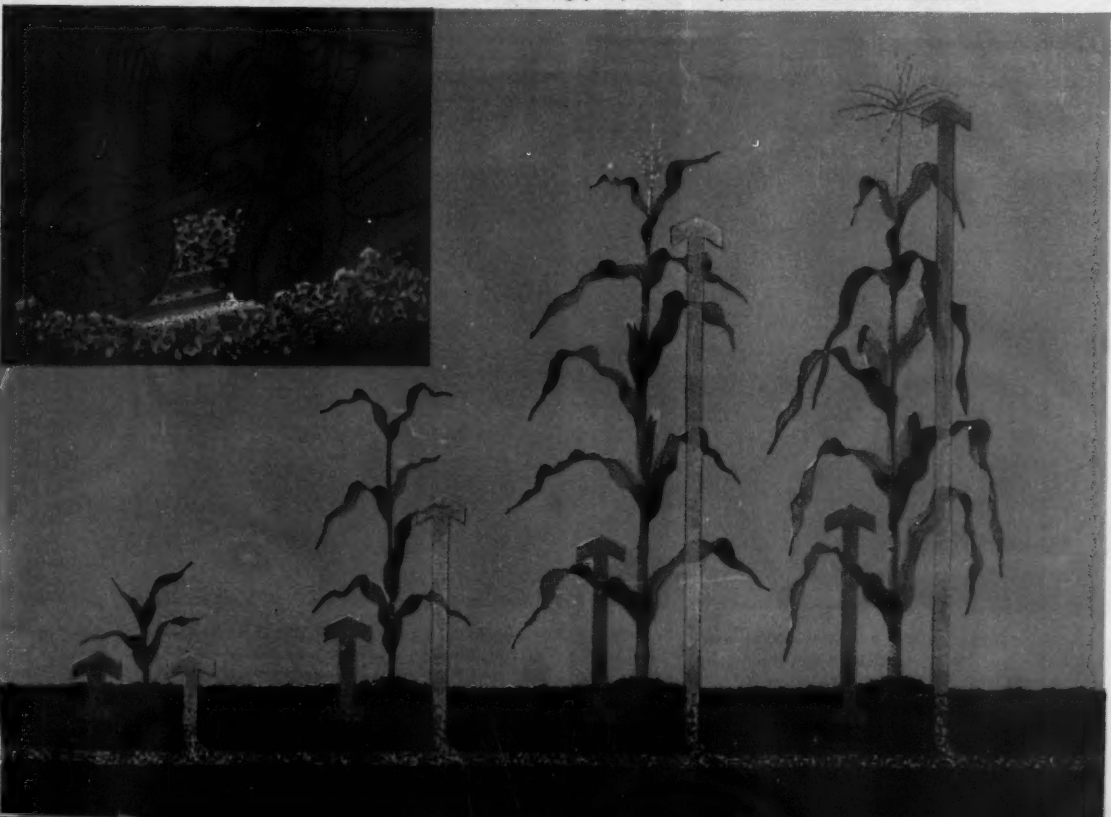
Phosphate intake by corn plants as revealed by research with radioactive phosphate. Here 30 pounds of P_2O_5 per acre was side-banded by planter. At 3 weeks of age, 3-4 pounds P_2O_5 per acre were taken from the band, and from the soil. At 6

weeks, 4-5 pounds P_2O_5 from band, 12-15 pounds from soil. At 8 weeks, band intake unchanged, soil supplies 30-35 pounds P_2O_5 . At 14 weeks, band intake unchanged, soil 40-45 pounds P_2O_5 . The plant uses the most band phosphate when young.

**FOLD OUT AND
SEE HOW THE
SYSTEMS WORK**

Potash intake of corn plants follows a different pattern. Here are the rates of uptake when 40 pounds K is side-banded in the row. (See inset drawing below.) At 3 weeks of age, 3 pounds K per acre taken from each source. At 6 weeks of age, 10 pounds K

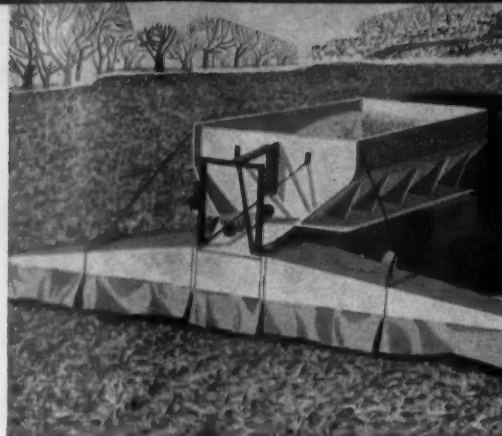
taken from band, 30 pounds K from the soil. At 8 weeks, 20 pounds K from band, 80 pounds from soil. At 14 weeks, 25 pounds K from the band, 100 pounds K per acre from soil. Corn plants take up potash from the band all season.



Broadcast these elements before you plant; or broadcast one, side-dress nitro



Nitrogen and potash are broadcast with any type of bulk handling equipment ahead of plowing. The cornstalks or crop residues are shredded, and sufficient nitrogen must be supplied to decay this material, as well as to feed the next crop.

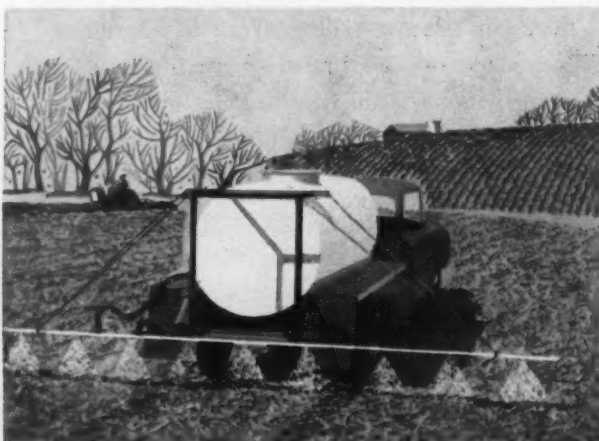


Potash alone is broadcast and plowed down. The fall is the most ideal time to spread with bulk trucks. The soil is dry, and compaction under heavy loads are less. Additional savings are possible by applying potash every 2-3 years and handling it in the



Nitrogen is broadcast, either just before plowing in dry or liquid form, or injected as a gas into the freshly plowed soil. Most forms of nitrogen can be applied in the fall after soil temperatures drop to 50°, with little leaching loss. The nitrogen becomes chemically attached to soil par-

ticles and to dead roots and vegetation. Fall application can save work, money in many corn-growing programs. However, the applying nitrogen in the fall should not be used on sandy soils known to leach during the dormant season.



Nitrogen and phosphate are broadcast and plowed down. Corn needs large amounts of phosphate in midsummer, from the soil. See the uptake graph of plant at 8 and 14 weeks. The broadcast application of phosphate fertilizer supplies this need satisfactorily.



Phosphate alone is broadcast and plowed down, if the nitrogen is side-dressed. Lime should be applied as indicated by a soil test representing possible fixation of phosphate in the soil. Enough phosphate should be applied to last 2-3 years and build up the soil phosphate levels.

nitrogen.



fall is probably the dry, and dangers of savings are made posing it in bulk.

Then apply these through corn planter.



Phosphate goes in the row, applied through the corn planter. This provides a supply for the plants early in life. Since studies with radioactive phosphate show corn plants take up only small quantities from the row, large amounts of it are not applied.

Side-dress after corn is up.



Nitrogen is side-dressed if not broadcast and plowed down. A pull-type spreader can be adapted to side-dress all the dry forms of nitrogen carriers. Many farmers using this system combine side-dressing with cultivating to cut costs.



ation can save time, however, this system of on sandy soils, or on



Phosphate and potash are both applied as a starter fertilizer, through the corn planter. Side-band attachments on the planter put the plant food beside and below the seed. Rates run around 150-200 pounds per acre of a 1-4-4 or similar ratio.



Nitrogen can again be side-dressed. Many corn growers like to wait until their stand is up, before deciding just how much nitrogen to apply. Even on manured fields, extra nitrogen will often be needed to produce top yields.



the nitrogen is side- until test report to avoid phosphate may be ap- te levels.



Potash alone is applied in the row through the corn planter. This practice sounds radical, but with the side-band planter attachments which separate potash from the seed, injury from potash salts is avoided. These attachments are now made for most planters.



Nitrogen is side-dressed when phosphate is applied alone. The types of application equipment and the forms of fertilizers shown in each of these systems can be, and should be, changed to fit your own individual farm and field conditions.

“Which fertilizer system for you?”

is the latest in a long series of **SUCCESSFUL FARMING** articles that sell the merits and methods of plant food use. In urging farmers to systematize their application, **SUCCESSFUL FARMING** provides practical, “how-to” management help which results in more effective — and increased use of fertilizer.

SUCCESSFUL FARMING continually recommends soil testing to determine proper fertilizer needs. It emphasizes the importance of companion practices: soil and crop insect control, weed control, adequate plant population which must accompany fertilizer application to obtain maximum productivity. Dramatic editorial presentations like, “Where do you put starter fertilizer?” (March, 1957) . . . The Bluegrass Revolution series (1958) . . . are a part of **SUCCESSFUL FARMING**’s continuing editorial program that serves the farmer and sells fertilizer.

Now . . . to help you sell more fertilizer . . .





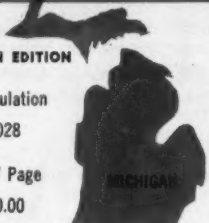






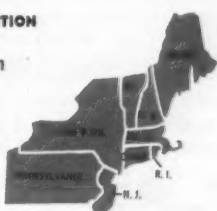
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With a national circulation of 1,300,000 **Successful Farming** offers plant food advertisers a rich, responsive audience of the nation’s best farmers. For the past decade **Successful Farming** families have received an estimated cash farm income of around \$10,000 . . . 70% above the U. S. farm average. They operate big farms averaging over 300 acres with 11 permanent buildings. They are progressive, profit-minded farmers who editorially have been pre-sold on the proper and adequate use of plant food. They are using more fertilizer today . . . represent a select market for big tonnage sales in the sixties.

Today—more than ever before—profitable farm selling is selective selling. Your best fertilizer customers are concentrated among the top 44% of the nation’s farms which receive 91% of cash farm income . . . dominate farm production and farm spending.

Successful Farming provides advertisers with the most effective — most efficient route to reach and sell these select high-income farmers. Throughout the great central valley, **Successful Farming**’s circulation closely parallels the distribution of prosperous, business farms. No medium offers a better fertilizer market — nationally, regionally or locally.

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Advertisers may use any one of twelve basic state and regional editions—or any combination of editions—which best meets their specific selling needs. An infinite number of combinations is available. When identical copy is used in more than one edition, circulation may be cumulated and space rates for the resulting combination-edition calculated from a cost-per-thousand table.

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Advertising in State and Regional Editions will be printed on both offset and letterpress equipment. Advertisers using black and white, or black and one color space may submit either offset materials or letterpress plates. Four-color offset is also available to state and regional edition advertisers by special arrangement with the publisher.

For the first time in a quality farm magazine, advertisers have great flexibility in localizing copy . . . intensifying sales support in areas where sales potential and distribution are best. Fertilizer advertisers can tailor copy to seasonal variations, soil differences, crop and climatic factors.

This unique plant food article . . . "Which fertilizer system for you?" has been reproduced as a 30"x40" wall chart in full color. Limited quantities of this enlarged reprint may be obtained by writing **Successful Farming**, 1716 Locust, Des Moines, Iowa.

Whether your advertising requirements are best served by the national edition—or by the new state and regional editions—or a combination of both . . . you need **Successful Farming** for its impact and influence, penetration and pull . . . effectiveness and economy.

Plan now to capitalize on America's most flexible magazine buy—**Successful Farming**.

Here's how
Successful Farming
sells fertilizer

Better Knowledge of Nutrient Needs, Improved Equipment, New Tillage Methods Seen as Agriculture Changes for 1970

By **DR. FLOYD W. SMITH**

Agronomy Department
Kansas State University

EDITOR'S NOTE: Dr. Smith's article was part of the "Blue Print for Tomorrow" feature which appeared in the Kansas State University's publication *The Kansas Agricultural Situation*, of October, 1960. In the feature a number of Kansas State scientists give their views on the Kansas agriculture situation in the next decade.

BETWEEN NOW and 1970, you can expect changes in the understanding of plant nutrient needs, modification of cropping systems, improvement of farm machinery, alteration of tillage practices, and general changes in the agricultural economy of Kansas. All of these will affect soil management.

By 1970, Kansas farmers may well use 500,000 tons of commercial fertilizers containing some 200,000 tons of plant nutrients each year. Today we use 300,000 tons of material carrying 120,000 tons of nutrients.

Nitrogen consumption will reflect these changes the most. The trend toward monoculture, consistent production of the same crop on the same fields year after year, plus a better understanding of nitrogen usage will stimulate consumption of this element. Non-pressure nitrogen solutions probably will be used in substantially greater quantity because of their easy application.

Phosphate needs will increase as soils become more depleted with heavy cropping. Concentration of phosphate—both in straight goods and mixed fertilizers—will continue

to rise. Grades such as 16-48-0 will gain popularity, those such as 16-20-0 will fade rapidly.

Potash needs, though small when compared with nitrogen or phosphate, will be better understood 10 years from now. Lime consumption cannot be expected to increase much.

Trace and secondary plant nutrient elements may well receive more attention. Boron needs of Kansas alfalfa were demonstrated as early as 1947 but little has been done to remedy these. Perhaps the next decade will bring changes.

Zinc-containing fertilizers will be used in greater quantities, particularly as land is leveled for irrigation. Preparation of new iron compounds may make soil applications of this element more practical.

Machinery should do a better job of precision application of fertilizer. Greater farmer acceptance of such machinery should stimulate fertilizer consumption because it will increase fertilizer benefits and provide for safer application. Nevertheless, due to demand for labor saving techniques, particularly at planting time, bulk spreading of fertilizers before and after planting will become more popular. This is particularly likely with straight nitrogen carriers.

Physical condition and physical form of fertilizer will be better. Granulation will improve and concentration of nutrients will continue to rise.

In any event, the Kansas fertilizer industry—a ready agribusiness having more than \$20 million of sales

each year—may well become a \$35 million enterprise. Properly applied, these nutrients should add more than \$80 million to farmer income by 1970.

More general monoculture will tend to deplete soil nutrients rather quickly. Particularly will this be true in irrigated areas where more or less continuous corn or sorghum production will extend over a number of years.

Alfalfa probably will be the only important legume forage grown and its production will be confined mainly to favorable sites. This will discourage crop rotation. Feeding green chopped forages, use of more preserved forages instead of grazing, and other intensive commercial feed lot practices will result in less and less return of animal manures and plant residues to the land. All these mean rapid depletion of soil fertility.

Less, but more effective, tillage will be the keynote of land cultivation in the future. More effective weed control, better spacings of intertilled crops, effective use of starter fertilizers and more timely plantings will enable the farmer to eliminate some entire cultivations.

Double cropping, as will be done on irrigated acres, may make use of the plow an occasional practice rather than a routine operation. "Minimum" tillage will become a reality—perhaps not as advocated in the more humid areas to the east but certainly a factor in Kansas agriculture.

Soil Insecticide-Treated Corn Out-Yields Untreated in Iowa

AMES, IOWA — Soil insecticide-treated demonstration plots in wind-damaged corn fields in Adair and Dallas counties this fall outyielded corn in accompanying untreated test strips by 30 and 24 bu. per acre—even though the corn was 100% flattened by wind, reported Harold Gunderson, Iowa State University entomologist.

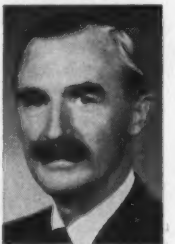
He said corn that had been treated for protection against root-damaging soil insects remained anchored in the soil even though the corn stalks were lodged. Stalks similarly lodged in the untreated test strips could be pulled out of the ground with one hand.

Mr. Gunderson pointed out that any corn will go down when hit by 100-mile-per-hour winds. Many Iowa farmers whose corn went down in August's high winds thought soil insecticides they had used had failed to do their job. Most of these, however, Mr. Gunderson said, did not leave untreated test strips in their fields to compare with the treated areas.

Past experience has shown that soil insecticides are worthwhile in nine out of 10 cornfields in Iowa, he added. Farmers who want to learn whether they would profit by using these insecticides can do so by treating most of their crop and leaving untreated strips for comparison, Mr. Gunderson said.

Miller Publishing Co. Names New Officer

Norman Couper has been named treasurer and comptroller of The Miller Publishing Co., publisher of CROPLIFE, it was announced by Milton B. Kihlstrum, president. Mr. Couper will assume the new post in November.



Norman Couper

Mr. Couper formerly was executive vice president and general manager of Sifo Co., St. Paul. He had been with the firm 11 years, and is a former officer of the St. Paul chapter, National Association of Accountants.

Born and educated in Dundee, Scotland, Mr. Couper in 1939 enlisted in the renowned Black Watch Regiment. He was commissioned into the Indian Army, where he served with the 45th Rattay's Sikhs. He completed his service in 1948 with the rank of major.

During his military service Mr. Couper married Helen Dahleen, Sacred Heart, Minn., who at that time was secretary to the U.S. ambassador to Iraq.

Upon completion of his military service Mr. Couper and his wife took a world tour, returning to Minnesota, where they established residence in St. Paul. They have two sons, Ross, 8, and Alastair, 5.

Ohio Pesticide Institute Sets Winter Meeting Dates

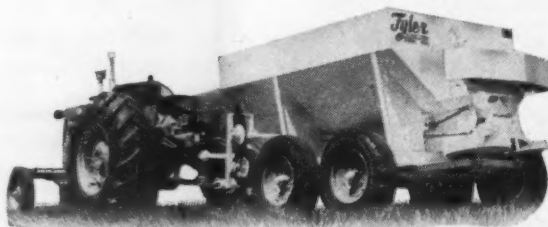
COLUMBUS, OHIO — The annual winter meeting of the Ohio Pesticide Institute will be held at the Nationwide Inn here, Jan. 10-11.

According to an institute spokesman, as a change from the usual program, the first day will be devoted primarily to information of interest to pesticide dealers. The second day will be of a more technical nature, and will be directed to representatives of the various pesticide companies.

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With the F-2*, High Capacity, Do-It-Yourself Fertilizer Spreader

With a Capacity of Up
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Will Spread Up to an Acre
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- ★ Profit on Rental
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The Tyler F-2 will go wherever and whenever a farm tractor will go!

SPECIFICATIONS

Body Weight—1,430 lb.
Hopper Dimensions—60"x84"
Wheel Track—74 inches
Axle Rating—8,000 lb.
Type Axle—Tandem Torsion
Spring
Fan—Angled Twin 19 in. dia.—
PTO driven

Wheel Bearing—Sealed Timkin
Bearing
Capacity—2½ ton
With Body Extension—19 in.,
4 ton
Conveyor—7½" mesh galvanized
steel, positive ground drive,
stainless steel optional.

Spread Pattern—Approx. 45 ft.
Bearings—Sealed, industrial type
with grease fitting.
Spread Capacity per hr.—30-60
acres
Field Speeds—6 mph, 30 acres
per hr.; 12 mph, 60 acres per
hr.; 18 mph, 90 acres per hr.
Highway Speeds—Up to 60 mph

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FARM SERVICE DATA

EXTENSION SERVICE REPORTS

One reason why midwestern farmers are changing their cropping systems is the availability of low cost fertilizer, reports Dr. John Pesek, Iowa State University agronomist.

This trend will result in better land use, Dr. Pesek believes. Farmers can grow corn continuously on land best suited to corn; land subject to severe erosion can remain in sod and forage crops and rotations can be used on in-between acres. The expanding use of chemical nitrogen has helped make these changes possible.

"Modern farmers can change their rotations within wide limits today, because they can readily obtain and add the necessary fertilizer which these changes require," he points out.

"The actual limits to changes in Corn Belt cropping systems are not set by the soil's original fertility in these days of inexpensive and adequate supplies of nitrogen, phosphate and potash fertilizers."

Dr. Pesek says these changes in cropping systems mean: 1—More corn-following-corn for an increasing number of years, perhaps indefinitely on one hand, and 2—The need for long-lasting stands of sod or meadow crops to supply forage and roughage needs.

"In between are the conventional rotations applied on soils not suited to intensive row crop production, but too expensive and potentially productive to leave in permanent meadow or pastures," he reports.

"This trend toward intensive row cropping at one extreme and intensive forage production at the other, will promote more profitable farming, because part of the low income oats acreage is omitted in the cropping patterns."

These shifts, he indicates, will bring about changes in fertilizer use. Continuous corn will require more nitrogen and relatively less potash. Legumes and forage crops will need more potash and less nitrogen. So far as phosphate is concerned, it would be more profitable at present farm prices to apply higher rates of phosphate fertilizer for corn than for legume meadows and pastures, Dr. Pesek says.

★

Crops are more likely to come through dry spells in good shape if the available phosphorus level is high, according to Dr. Sterling Olsen, soil scientist with the Agricultural Research Service and Colorado State University.

The drier the soil, the more difficult it is for plants to "take up" phosphorus. As a result, both lack of water and lack of available phosphorus may limit crop growth and yields during dry periods, Dr. Olsen said.

However, if the phosphorus level is high during moist periods, the plants will absorb more phosphorus than they need. When a dry spell comes along, the plants can then draw on the phosphorus they have stored. This, combined with moisture pulled from the deeper—but generally phosphorus-deficient layers of soil, gives the plants a much better

chance to survive drouth periods.

Best way to determine how much phosphorus to apply is to have a soil sample tested, the scientist pointed out.

Dr. Olsen's recommendations are based on both field and laboratory studies which showed how varying amounts of soil moisture affect growth and nutrient uptake by corn plants.



JOHN HOWARD, right, and Amos H. Underwood, county agent, look over a sign calling attention to an alfalfa-fertilizer demonstration on Mr. Howard's farm near Holbrook, Ariz. This is one of several Arizona demonstration programs in which the National Plant Food Institute is cooperating.

When you order ANCHOR fertilizers, you get phosphate with a PLUS!

Progressive marketing, local service, powerful brand advertising, promotional help . . . you can have all these extras with Anchor!

And whether you sell Anchor products or use them in your own formulations, you can always count on the highest quality from these outstanding fertilizer materials:

Anchor Treble Superphosphate 45%, pelleted—900 lbs. per ton of available, readily soluble phosphate.

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Liquid Phosphoric Acid—Suitable for soil or water application or for manufacturing complete fertilizers.

Anchor Ammonium Phosphates—Completely soluble phosphate in four chemically combined analyses: 11-48-0, 16-20-0, 13-39-0 and 16-48-0.

New Anchor Ammonium Nitrate Phosphates are now available in many Western areas. Your Anchor representative can give you full details.

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Anchor Custom Service program builds your profits. Backed by a complete promotional package. Other new programs are under constant development.



LOCAL ANCHOR SERVICE

Centrally located plant. In-transit warehouse network. Eleven Western sales offices.



POWERFUL ANCHOR ADVERTISING

Informative ads publicize phosphate results in 13 Western state farm papers, 7 regional farm magazines, including Western edition of *Farm Journal*. Also an extensive outdoor campaign, TV and radio, for complete coverage.

AND PRACTICAL ANCHOR PROMOTION

50-50 co-op ad plan for dealers. Useful counter giveaways. New color movie tells fascinating story of phosphate. Prints available for local use.

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SCHOENFELD AND MCGILLICUDDY



OSCAR & PAT

By AL P. NELSON

When Pat McGillicuddy came down to work that late summer morning it was about 10 o'clock. Pat had been up late the night before writing an advertisement, and thus had slept a little late.

"Hi, Oscar," he greeted cheerily as he glanced at his desk to see if there were any phone messages. "Beautiful day, isn't it? Just the day for me to go out and try to sell some fall plow down fertilizer. I should be able to make four or five productive calls before six bells tonight."

"Chust a minute!" Oscar said sharply, swinging around in his swivel chair. "Don't you think it is a good idea to collect for fertilizer you sold last winter and sprink before you go and sell more for fall?"

"Why? Aren't accounts being paid pretty well?" Pat asked.

Oscar snorted. "You know they ain't. McGillicuddy, haf you been readink the fertilizer and feed papers?"

"Sure, where else do you think I get many of my sales ideas?"

Oscar sneered a little. "You read only the sales ideas. I know you. You skip all those articles that say how important it is to collect for what you sell. Ach, McGillicuddy, I haf got news for you. Lots of articles haf been runnink in the trade papers say-ink how tough it is to collect money."

"Oh, that will pass," Pat said. "Once the harvests are complete and lots of pigs and steers are sold, farmers will have the money to pay. Let's not worry."

"No, you do not worry!" snapped Oscar. "But I do. The articles in the paper say the best way to start getting money in on old accounts is to ASK FOR IT."

"Ask for it?"

Oscar nodded. "That is somethink you neffer do, McGillicuddy. Always you laugh and tell jokes with farmers, you schlap them on the back and then you get them to sign

an order for fertilizer. You forget to ask when they are goink to pay."

"You can't sell a man and insist on his paying at the same time," Pat retorted. "You can always collect when the bill comes due."

"Which you don't," Oscar growled. "You forget. You chust go outd and sell somebody else. Listen to this, Irish—"

"It's getting late," Pat said. "I ought to be out making some sales calls."

"Ach, you listen or when your crazy sales orders come in I won't let the fertilizer be delivered until the pay terms are right."

"You wouldn't dare! Sales are so hard to make."

"Collections are harder, Irisher." The two men glared at each other. Both had different ways of running a business, especially on sales, credits and costs.

"Well, make it fast," Pat snapped. "I don't want to waste the sales day listening to cost reduction and collection data."

Oscar lifted a sheet of paper. "Ach, I have some schtuff from the trade papers. They say to put up a sign tellink farmers that all charge business is a privilege, and that after 30 days, all accounts are past due. They say to charge 1% per month on bills that ain't paid after the 10th."

Pat looked shocked. "Our customers won't stand for it."

"They'll have to!" Oscar snapped. "We ain't running a charity business, McGillicuddy. If a farmer don't pay us for six months he ties up our money and we get no interest. At 1% per month we standt a chance to make some money. Other dealers are crackink down on accounts. We've got to also."

"But we'll lose customers."

Oscar shook his head. "The kind we lose we don't want. They cost us money. Ach, the men that write these credit articles, they think like I think. The whole business worldt is not goink to the devil yet, so

long as there are men like that. Listen to this, McGillicuddy."

Pat grimaced but said nothing. "Ach, this article says," went on Oscar, "that an account properly opened is an account half collected. That means, don't sell to stinkers that don't pay. Here's another goot idea—use credit investigation. That is what you don't do, McGillicuddy. You sell to any Tom, D'ck and Harry and pray he'll pay without us ask'ink for the money. How foolish."

"It's hard work to sell!" Pat protested. "Our customers will think we are going broke if we ask for the money so soon."

"We will go broke if we don't collect better," Oscar burst forth. "The men who write these credit articles are right. Fertilizer and feed dealers don't make enough credit investigations, they don't age their delinquent accounts, they sell without knowink if a farmer owes lots of other dealers. And if they don't pay more attention to collections and a good credit policy lots of them are going to go broke."

"We'll go broke if we don't sell!" muttered Pat.

"No!" exclaimed Oscar. "The customer that has goot credit, he will pay on time. He'll agree to definite pay dates. You'll see. We won't lose them."

Pat looked downcast.

Oscar held up a list. "Here are the delinquent accounts. I've got them aged, McGillicuddy. Look, some of them are nine months oldt. For shame. Now you take this list and go outd and collect today. If a man don't pay, then don't try to sell him any fall fertilizer. If he pays half or more on the oldt bill, then talk fertilizer to him."

"And if I don't?"

Oscar slipped his pudgy fingers underneath his thin, blue suspenders. "Ach, if you don't, I will plaster this schtore so full of PAY NOW signs that you can't see all them crazy displays you've put up. And I will write some letters that will singe the hair on some of them slow-payers."

"I'll go," Pat said resignedly. "I'll do the collecting—today. Only don't put up those signs."

"One sign I will put up," Oscar conceded. "It will say, no credit without application and references. It will also say all bills due 30 days, or 1% interest."

Pat's lips were tight. "I'll show you," he said, getting to his feet and taking the list. "I'll show you I can collect and sell, too. And I want to see the wording of that sign before you put it up. I'm a partner in this business, remember."

After Pat had gone, Oscar sat looking at the wall, little prickles sweeping over his fast beating heart. "Ach," he whispered to himself, "for once, I won. By golly, it feels goot to win. Thanks, you schmart men who wrote those credit articles." And he patted several copies of trade papers that lay on his desk.

SALES CLINIC

NEW YORK—Program plans have been completed for the Annual Sales Clinic conducted by the Salesmen's Association of the American Chemical Industry, according to James E. Shand, Allied Chemical Corp., Sales Clinic committee chairman. The Clinic, scheduled for Nov. 14, at the Hotel Roosevelt, New York, will take for its theme "How the Company Can Better Cooperate With the Field Salesman."

ONE-THIRD

(Continued from page 9)

says he will find out the answer then forgets it—well, he is surely going to lose some customers. He must know the answers or be able to find them in a hurry."

Mr. Hudson says fertilizers do not bring a huge profit, but in 1959 his margin was 9% on a \$45,000 gross.

"This profit plus what we made on insecticides and other farm chemicals made these items a very worthwhile part of the business," he said. "In 1960 our total volume will reach about \$400,000, with part of the increase coming from fertilizer and insecticides."

Credit is a problem with any dealer, and this one is no exception. If the customer owns his farm, credit will be extended for several months. Otherwise Mr. Hudson collects within 30 days.

One part of the business is in keeping up with new products and crops. Mr. Hudson checks into each one closely before recommending it. He has found that nine out of every 10 new crops introduced to this area have ultimately failed. Because of this, he will pass up a few sales before asking a farmer to buy something that is untried.

In expanding the business, he added an outside salesman who now calls on large farmers and dealers. The store is now an area distributor for a nationally-known garden fertilizer. This has been highly profitable, so Mr. Hudson is gradually collecting a group of dealers in other towns who will use other products.

"It takes close management and a willingness to give service to keep up in this business," he says. "This area has done less row cropping, so we are now pushing fertilizer on pasture land and urging farmers to increase their livestock. As a result our fertilizer sales are increasing each year. Farmers are still using only half as much as is needed, so there is still a big potential for us to capitalize on."

Aerial Operators to Meet in California

SAN FRANCISCO—The Agricultural Aircraft Assn., with headquarters at Chandler Field, Fresno, has announced it will hold its 11th annual convention in the El Dorado Hotel, Sacramento, on Jan. 5, 6, 7, 1961.

Crop spraying and aircraft demonstrations will be held the first day of the convention at Jack Rich's Farm Air, Inc., airport at Natomas. Free transportation will be provided from the hotel to the airport. The airplanes will be on display throughout the convention.

Distributor Named

RICHMOND, CAL.—Charles E. Cody, western regional manager, Ortho Division of California Chemical Co., announces the appointment of American Factors, Ltd., as distributor of the "Ortho" line of agricultural and garden pesticides and fertilizers in Hawaii.

TV WATCHING

(Continued from page 12)

that will help them to produce better. Furthermore, the effort is more of a hobby than a profit-making endeavor, and so these customers are not at all cost-conscious about suggested insecticides and remedies. They respond particularly well to companion selling and are particularly appreciative of suggestions made.

"One thing we realized quite some time ago," stresses Mr. Wilson, "is that you can't expect to build a profitable insecticide-pesticide business unless you are willing to stock it and then show it in a manner to induce customers to see and buy it."

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ROUND TABLE

(Continued from page 1)

Henry Wheless, Davison Chemical Division, W. R. Grace & Co., described the process of continuous superphosphate production, comparing modern methods with those used some years ago. The new process, installed in the Davison plant was illustrated in a series of slides. The speaker said the process was designed to tie in to the existing ground rock storage bunkers acid supply and fume removal system.

Employing schematic drawings to supply detail to his talk, Mr. Wheless described the variable speed screw feeder, the control room and weighing devices, and said the system can deliver ground rock to the acidulation cone at a rate of some 55 tons an hour. For limited periods, he said, the process has operated at the rate of nearly 100 tons superphosphate an hour.

Sulfuric acid at a concentration of 57° to 58° Baume and at a temperature of approximately 90° F. controlled by indirect heat exchangers is supplied to an indicating-controlling magnetic flowmeter at 25-30 lb. pressure and metered to the mixing cone through a four-nozzled ring manifold. The process, he said, consumes about 33 tons acid an hour basis 100% sulfuric acid, or over 100 gal. a minute at 90° F.

Under the old batch process, he said, most of the gases liberated during mixing and during the filling of a den were removed to the fluoride recovery plant, but during the reaction in the deep den, some gases were generated which were not liberated from the mass until the clamshell began its excavation. These gases and those liberated during disintegration were lost.

Now, however, a helical cutter replaces the den digging and the rasping operations and since it is incorporated in the fume removal system, fluoride recovery as well as working conditions in the plant have been improved considerably, he reported.

Mr. Wheless said that the moisture in the superphosphate as it is discharged to storage is about 10% and after curing for three or four weeks, it drops to approximately 6%.

The types, sources and characteristics of phosphoric acid were covered in a paper by William Weber, Dorr-Oliver Co. He described how production of phosphoric acid is on the increase, with 2.6 million tons a year being made at the present time. He predicted a continued increase in output for these reasons: First, the improved design of manufacturing plants; second, the continuing trend toward high-analysis fertilizers; third, the increasing popularity of liquid fertilizers, and fourth, the good handling and storage characteristics of phosphoric acid and its compatibility with most other fertilizer ingredients.

A question-and-answer period following the talk brought out further highlights of the phosphoric acid subject. When asked the range of sulfuric acid content, and fluoride content to be found in run-of-the-mill wet process acid, Mr. Weber said it would be in the range of 15 to 20%. He added that this estimate was based on 62% P₂O₅.

Mel Leach, Indiana Farm Co-op, related some of his company's experiences in using phosphoric acid in mixed fertilizer production, stating that the storage of acid is an important but tricky matter. He urged his listeners to be sure the tanks have been thoroughly tested before filling them. At one point in his talk, he asked for a show of hands of those using phosphoric acid. Approximately a third of those present so indicated.

Plant equipment, he said, plays an important part in the process. The same type of dryer with different ar-

rangements for the introduction of air will give different results, he said. Therefore, the equipment and other factors, such as temperature, must be considered before one finds the answer to production problems. Use of both volumetric and magnetic meters are suitable for measuring flow, he said, providing allowance is made for changes in viscosity in the case of the volumetric type.

Rodger C. Smith, Eastern States Farmers Exchange, pointed to the 60% increase in use of phosphoric acid during the past three years as evidence of its general acceptance. Its popularity is largely in the granulation field, he said, as a substitute for sulfuric acid.

Sulfuric acid creates heat of 2940 BTU per pound of ammonia; phosphoric acid, 1823 BTU; triple superphosphate, 1643; and ordinary superphosphate, 1428 BTU, the speaker declared.

In most cases, he said, a slight adjustment of the water content or dryer temperature will compensate for the lower heat of reaction in using phosphoric acid. "The most satisfactory alternative," he said, "is production of more concentrated grades which entail reaction of more ammonia and acid enabled by the use of phosphoric acid."

Mr. Smith pointed out further that the choice of nitrogen solution may be affected by the higher water content of phosphoric acid. Using it, he said, solutions may be used with water content as low as 6%.

F. M. Batson, General Chemical Division, Allied Chemical Corp., discussed phosphoric acid from the standpoint of storage and handling. Most common storage facility is the rubber-lined tank, which he said will last for years. Stainless steel, providing the tanks are made of at least 3/16 plate, will serve well, he added. Various uses of plastics are being made, he reported, including the use of a plastic bag placed within the tank. Prices for different types of equipment range from 50¢ gal. down to 5-10¢ gal. The latter was the estimated price for a pool type setup where the acid is stored in a plastic-lined ditch.

The speaker reviewed different types of pumps and pipes, stating that choice of such equipment should be based on its ability to hold up under the corrosive action of the acid. These considerations are complicated by the influence of low temperatures on the acid. At zero or below, the material will either freeze or become very viscous, he said.

Heading a panel on the behavior of triple superphosphate in mixed fertilizer formulation, Frank Nielsson, International Minerals & Chemical Corp., introduced the subject by stating that the use of triple has increased 1860% in the past 20 years. Its production is still on the upgrade, he declared.

One panel member, Joe Markey, Tennessee Corp., Atlanta, said that the fertilizer industry has revolutionized itself in the past decade, particularly in granulation, high analysis, continuous processes, increased use of ammonia and other processes.

There is no single answer to production problems in the industry, he emphasized. Considerations include economics, the demand for products, existing circumstances, technology and what the competition is doing.

Charles Franklin, IMC, told the Round Table that a number of factors dictate the efficiency with which triple may be formulated. These include particle size, moisture content, temperature, porosity of the material and the time involved in formulation.

Mr. Franklin said that absorption of ammonia depends greatly upon particle size, with 80-mesh particles absorbing many times more than particles passing through a -6 to plus 10 mesh screen. Higher ammoniation rates are obtained with more porous triple, he added.

As to temperature, he said that under 100° F. was too cool, but best results were obtained in the range 140-150°. Above the 220° mark, however, efficiency tapered off.

Over agglomeration reduces the surface exposure and thus lessens the ammoniation rate, he said. This can cause heavy losses in materials and should be avoided.

Dan Walstad, American Cyanamid Co., said that although fineness and porosity of triple enhances ammoniation, these factors are not favorable for granulation. Thus, a compromise must be reached. Since ammoniation is of more critical importance than granulation, ways must be found to granulate fine, porous material. The formula may be changed to alter the amount of the liquid phase, he suggested.

This may be done through placement of the sparger, changing its size, altering the rotation speed of the drum and perhaps lengthening the drum. A longer drum permits use of a longer sparger. However, Mr. Walstad warned, increasing the liquid phase may raise costs unless equipment in the plant is in excellent working condition.

A. B. Phillips, Tennessee Valley Authority, Wilson Dam, Ala., told about the work of TVA in developing new processes, particularly diammonium phosphate and how it can be used in the continuous ammoniator. He said that a 21-53-0 grade had been made with electric furnace acid, as had an 18-46-0. Another grade with potash added, analyzes at 14-35-14, he said.

The speaker presented a flow diagram of the TVA process for diammonium phosphate, describing the entire setup in detail.

A description of nitric-phosphate production was presented by Clem B. Giles, California Chemical Co., Richmond, Cal. He recalled his own company's participation in the fertilizer manufacturing industry, from the time of its start in 1956. He said the Potasse et Engrais Chimiques (PEC) process was first used and has continued to be employed in subsequent plants built by the company. He described the process as used not only in the original facility at Richmond, Cal., but also the one at Kennewick, Wash. and the latest unit soon to be under construction at Ft. Madison, Iowa.

Feature of the process, he said, is the fact that all reactors are the same, making it relatively easy to expand capacity by simply adding additional reactors.

Dr. K. D. Jacob, U.S. Department of Agriculture, reviewed developments in the phosphate field, stating that the phosphate pioneers Lawes and Liebig would scarcely speak the language of today's fertilizer technologists if the former pair could return to the modern scene.

The speaker said that the industry has advanced far beyond its scavenger days when nitrogen was obtained largely from animal waste, bones, fish and other organic scrap. Fertilizer plant workers in those days, he said, acquired an odor to which other people sometimes took offense. The industry is now a full-fledged chemical processing trade and the connotations of the former days are gone.

The Round Table was to continue its program on Nov. 3-4, with panel discussions on standardization of raw materials, problems in instrumentation, and statistical evaluation of nitrogen losses in drying. A business session and a panel on preneutralization were to complete the session.

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MIXTURES

(Continued from page 1)

made by respondents in the report indicate that states not yet having specific regulations will probably have some in the future.

Bulk sales of mixtures are permitted by thirty-one of the states. Fourteen states require heavy paper containers for packaging such mixtures, and thirty-nine states require directions for use and warning statement on such packages. Fifteen states require a special tag for such mixtures.

The report says that thirty states permit "buyers' mixtures" or "farmers' mixtures," and forty-four states analyze the mixture for its fertilizer content. Thirty-three analyze for pesticides. Thirteen states have established pesticide tolerances and thirty-two have not.

Following are specific questions asked in the questionnaire, and their replies:

Q.—Are fertilizer-pesticide mixtures sold in your state?

By far the great preponderance of state control officials indicate that these mixtures are sold in their states. The only states indicating that such mixtures are not sold within their borders are Alaska, Connecticut, Hawaii, Massachusetts, Nevada, New Mexico, New York, and Utah.

This is approximately the same answer received in a similar survey made in 1956. The states that year which indicated that no fertilizer-pesticide mixtures were sold within their borders were Arizona, Massachusetts, Mississippi, New Mexico, New York, Rhode Island, Texas and Utah.

Q.—Are these mixtures registered under your fertilizer law?

A negative reply was given by practically the same states which indicated that no pesticide-fertilizer mixtures are sold within their borders. This was to be expected, of course. The state of Hawaii indicated that it has no fertilizer law, so the question would not be appropriate here.

Q.—Do you collect the regular fee and tonnage tax under your fertilizer law?

Most of the states queried said that they do collect in this manner. The only one indicating that it does not, was Alaska. All of the other replying states indicated affirmatively. Indiana noted that it collects a tonnage tax and New Hampshire collects a regular fee only, not a tonnage tax.

New York state says that no fertilizer-pesticide mixtures have been registered for food crop use. In connection with the fee, it says that a license fee would be collected, but the state has no tonnage or tax fee.

Q.—Do you have a law regulating pesticides?

Here again, most of the states indicated that they do have such a pesticide law. The exceptions to this were Alaska, Delaware, Idaho, Illinois, Indiana, Massachusetts, Nebraska, and West Virginia. In a footnote on the questionnaire, Nebraska says that it has no pesticide law, but if pesticides should be mixed in fertilizer, the manufacturer must protect himself by labeling as required by the U.S. Department of Agriculture.

Q.—Are these mixtures registered under your pesticide law?

Only a few states answered negatively to this question. These states were Connecticut, Florida, Iowa, Montana, and the Dominion of Canada.

Q.—Do you collect the regular fee under your pesticide law?

The only states saying "no" to this question were Florida, Iowa, Montana, South Carolina. Nevada added a footnote that it collects registration fees only.

Q.—Name the pesticides which are generally used in mixtures for food crops in your state.

Alabama: Aldrin, chlordane, dieldrin, heptachlor, nemagon, terrachlor.

Arizona: Dieldrin and phorate.

Arkansas: Aldrin and heptachlor.

California: 1,2 dibromo, 3-chloro-propane.

Florida: Aldrin, chlordane, DDT, dieldrin, heptachlor, and nemagon. (Nemagon is permitted only on special order and must be used within one week, Florida notes.)

Idaho: Aldrin, DDT, and dieldrin.

Illinois: Aldrin, boron, dieldrin, and heptachlor.

Indiana: Aldrin, dieldrin, and heptachlor.

Iowa: Aldrin, heptachlor, aldrin-heptachlor.

Kansas: Aldrin, at rates of 0.5% and 1%.

Kentucky: Aldrin, dieldrin, chlordane, and heptachlor. (For corn and tobacco only.)

Louisiana: Aldrin, chlordane, dieldrin, heptachlor.

Maine: Aldrin.

Maryland: Aldrin, chlordane, dieldrin and nemagon.

Minnesota: Aldrin and heptachlor.

Mississippi: Aldrin, DDT and dieldrin.

Missouri: Aldrin.

Montana: Aldrin and heptachlor.

Nevada: Reports that none has been used to date.

New Hampshire: Chlordane.

New Jersey: Aldrin.

New York: Reports none of these are used for food crops.

North Dakota: Aldrin and heptachlor.

Ohio: 2,4-D.

Oklahoma: Aldrin.

Oregon: Aldrin.

Pennsylvania: Aldrin, calcium arsenate, chlordane, dieldrin, disodium methyl arsonate, phenyl mercuric acetate, potassium cyanate, 2,4-D and 2,4,5-T.

Rhode Island: Aldrin and thimet. (Experimental thus far, very small use.)

South Carolina: Aldrin, chlordane, dieldrin, nemagon, and PCNB.

South Dakota: Aldrin (state reports that very few mixtures are sold in that area).

Tennessee: Aldrin, chlordane, dieldrin, and heptachlor.

Texas: Aldrin, dieldrin, and heptachlor.

Vermont: Aldrin and dieldrin.

Virginia: Aldrin and heptachlor.

Washington: Aldrin, chlordane and dieldrin.

West Virginia: Chlordane and heptachlor.

Dominion of Canada: Aldrin and heptachlor.

Puerto Rico: Aldrin.

Q.—Does your state experiment station recommend fertilizer-pesticide mixtures?

To this question, about the same number of states indicated that such recommendations are made, as did who reported negatively. The ones where such recommendations are made were Alabama, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Maryland, Minnesota, Missouri, Nebraska, Oregon, Pennsylvania, South Carolina, Tennessee, Virginia, Washington, Michigan and Wisconsin. California reported that its experi-

ment stations are silent on the matter, neither recommending nor being against such mixtures.

Connecticut says that no such mixtures for food crop use have been recommended by its experiment station, and the experiment station would be consulted before a product is registered under the fertilizer law. Maryland says that a project is underway to get the state entomologist and agronomists to issue a "suggested list" to reduce the numerous variations of pesticides being used with fertilizers.

Q.—Do you limit registration and distribution of fertilizer-pesticide mixtures to those mixtures recommended by the state experiment station?

Those indicating that they do make such a limitation were: Alabama, Iowa, Kentucky, Maine, North Carolina, Virginia, Michigan.

Q.—Do you permit sale in bulk?

Most of the states indicated that they do permit such mixtures to be sold in bulk. Those which said they do not permit such are Kansas, Mississippi, Montana, Tennessee, and Michigan.

Q.—Do you require that mixtures be distributed in heavy paper containers?

A majority of the states indicated that they do not make such a demand. However, states that do make such a requirement are Florida, Georgia, Iowa, Kansas, Kentucky, Maryland, Montana, New Hampshire, New Jersey, North Carolina, Rhode Island, Tennessee, Virginia, and Michigan.

A comment made by the state of Maine says that the type of container is not specified, but the state would recommend the use of paper.

Maryland says that multiwall bags are recommended.

Somewhat the same is true of Mississippi, which says that mixtures must be packaged in multiwalled paper bags or other containers with equivalent retaining properties.

Nevada said that the answer to this question would depend upon the toxicity of the pesticide being used.

Q.—Do you require a label showing an ingredient statement for both fertilizers and pesticides?

In answer to this question, nearly every state said that they do require such a label. Exceptions to this rule were Maine, Ohio, Rhode Island, and West Virginia.

Indiana comments that such a label is not required for fertilizer, but it is for pesticides. A similar statement is made by Rhode Island, where it requires a label for pesticides only. Virginia says that a label is required for pesticides, but may be shown for fertilizers, for which only a guaranteed analysis statement is actually required.

Q.—Do you require directions for use?

Most of the states indicate that they do require directions. The exceptions to this rule are seen in reports from these states which indicated they do not require directions of this type. The states were Delaware, Nebraska, Ohio, Vermont, West Virginia, Puerto Rico.

Q.—Do you require a warning statement?

Somewhat the same picture is seen in the answer to this question as to the one above. Only Delaware, Nebraska, Ohio, Vermont, West Virginia, and Puerto Rico said that they

do not require warning statements.

Q.—If you have a fertilizer law and a pesticide law, do you require that these mixtures comply with provisions of both laws?

Answers to this one indicate that most states do require compliance with both laws. Not a single negative vote was cast among the states on this question. However, a number of states did not reply to the question. These states were Connecticut, Delaware, Hawaii, Idaho, Indiana, Massachusetts, Montana, Nebraska, New Mexico, Ohio, and West Virginia.

Q.—Do you require a special tag?

The answer to this query was far from being unanimous from either side. Following are the states which indicated that a tag is required for sales in its borders: Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Minnesota, Mississippi, South Carolina, Tennessee, Puerto Rico, Michigan, Wyoming, and the Dominion of Canada. The state of Maine says that poison labels are attached to the container in that state.

Q.—Do you permit "buyers' mixtures" or "farmers' mixtures" whereby a farmer may have any pesticide added to his fertilizer by the manufacturer?

Many of the states reporting say that such mixtures are legal. A few indicate that such special mixtures are not permitted. These states are: California, Georgia, Kansas, Louisiana, New Hampshire, South Dakota, Utah, Virginia, Puerto Rico, and Michigan.

The state of California says that the manufacturer may make a special mixture to the farmer's specification, but must label and register it just as he does a mixture made to his own specification. Tonnage of such mixtures in California is still small, the report says. With so many grades and so many different crops, manufacturers find the problem too complex to warrant making and stocking the large number of grades and levels that would be needed in this state.

Florida says such mixtures are legal if properly tagged. Indiana states that such a custom is permitted provided it is a legal custom mix.

Maryland says that although such practices are not approved, they are still being done in some areas of the state. The Maryland fertilizer law permits customers' mixes, but there are really no such things as a "customer mix" as a "pesticide-fertilizer mixture." New Jersey says that such mixes can be done legally with special permission.

Q.—Are sales of buyers' mixtures subject to regulation under pesticide laws?

Most of the states that permit such special mixes do regulate the same under their fertilizer and pesticide laws, according to the report. The states that indicate they do not make such regulations are Florida, Idaho, Maine, Oregon, Pennsylvania, Rhode Island and Wisconsin. Florida indicates that its laws pertain to fertilizer only. The same is true of Illinois, which says it regulates under the fertilizer law but it has no pesticide law.

Kansas says its regulations are under the pesticide law. Missouri has a footnote indicating that the situation varies, depending upon the type of sale involved. North Carolina says that the matter is as yet unsettled. In West Virginia, the regulations ap-

ply to fertilizers only. No pesticide law involved.

Q.—Do you analyze fertilizer-pesticide mixtures for fertilizer?

The answer here was unanimously affirmative. All the states replying to the questionnaire indicate that they do analyze for fertilizers.

Q.—Do you analyze fertilizer-pesticide mixtures for pesticides?

In this case, not all the respondents agreed. Quite a number of states indicate that they do not analyze such mixtures on the basis of pesticides. The states answering negatively were Vermont, West Virginia, Arizona, Delaware, Idaho, Missouri, Montana, Nebraska, North Dakota, Ohio, Rhode Island. Although Missouri said "no" to the question, indications are that it will change this in the future.

Q.—Have you established tolerances for deficiency or excess of pesticides?

Most of the states queried indicated that they have not set such a tolerance. However, a number of states have done so. They are: Arkansas, California, Indiana, Kansas, Kentucky, Nevada, New York, North Carolina, Oklahoma, Pennsylvania, South Carolina, Virginia, Washington, Puerto Rico and the Dominion of Canada. Kentucky says such a law applies for deficiencies only. Louisiana reports that rough tolerances are applied, depending upon the situation.

PERSONNEL

(Continued from page 3)

grams for the new division. He formerly served as advertising manager for the Lion Oil Co., a division of Monsanto.

Robert E. Ude of St. Louis will be responsible for the marketing services function, including sales forecasting and sales training programs, along with establishing and coordinating a variety of sales office operating procedures. He formerly managed sales office operations for the company's marketing service department.

IMC Promotion

SKOKIE, ILL.—International Minerals & Chemical Corp. has promoted James R. Archer to quality control manager of the plant food division.



James R. Archer

Mr. Archer will be responsible for the quality control of all products of the division and for the operation of the laboratory at East Point, according to John D. Zigler, vice president in charge of the plant food division. Mr. Archer formerly was chief chemist of the division. A chemical engineering graduate from Georgia Tech, Mr. Archer joined IMC in 1934. He subsequently was assistant chemist, chemist and finally chief chemist at the Wales, Tenn., plant. Transferred to the East Point laboratory in 1942, he was promoted to chief chemist in 1950.

Joins Sales Staff

PEABODY, MASS.—Selden G. Hait has been named to the sales staff of Atlantic-Vulcan Steel Containers, Inc., Peabody, according to

an announcement by Gordon D. Zuck, president.

Mr. Hait was a chemistry major at Pratt Institute.

Previously he was engaged in technical sales with Harshaw Chemical Company for 20 years.

He will be contacting users of steel pails and specialty tin cans throughout New England and the eastern states.

Named Eastern Agronomist

WASHINGTON—Dr. W. K. Griffith has joined the American Potash Institute as eastern agronomist serving the states from Virginia to Maine, announced Dr. H. B. Mann, president of the institute.



Dr. W. K. Griffith

He will serve under Dr. R. E. Wagner, eastern director of the institute. A native of Henry, Ill., Dr. Griffith formerly served as assistant county agent in Arizona where he worked with pasture and range leaders in Pinal County and also headed the county staff's horticultural work.

Later at Purdue University he served as research assistant, conducting various fertilization and clipping studies on the yield, persistence and chemical composition of orchardgrass.

Dr. Griffith earned a B.S. in agricultural education from Western Illinois University, an M.S. in agronomy from the University of Illinois and the Ph.D. in agronomy from Purdue University.

District Manager Named

NEW YORK—A. W. Kinnard III has been appointed manager for the south central district of the agricultural chemicals department, Commercial Solvents Corp., according to an announcement by Loy A. Everett, sales manager.



A. W. Kinnard III

He will make his headquarters in Shreveport, La., where the company has opened a new office at 418 Market St. Fertilizer manufacturers in the states of

Louisiana, Arkansas, Mississippi, Texas, Oklahoma, New Mexico and Arizona are included in this district. No change is being made in the salesmen serving this area.

Mr. Kinnard has for the past four years been associated with Commercial Solvents Corp., covering the state of Florida.



George L. McGuffey



H. W. Goodnight



John C. Frederick



Cecil E. Baylor

Sohio Appoints Four

LIMA, OHIO—Sohio Chemical Co. announced the appointment of George L. McGuffey as sales manager of national accounts; Harrold W. Goodnight as district sales manager in charge of the area west of the Mississippi; John Frederick as technical service representative, and Cecil E. Baylor as agronomist.

Mr. McGuffey will be responsible for all agricultural sales to selected accounts and will coordinate the efforts of the field sales force in this regard. He joined the chemical department in 1955.

Mr. Goodnight, who joined Sohio in 1939, has been with the chemical department since 1955. Mr. Goodnight, in his new assignment, will establish an office in Kansas City and will work with the new ammonia and urea facilities now under construction at Joplin, Mo.

Mr. Frederick will be responsible for assisting the company's customers in technical service aspects of fertilizer manufacture.

Mr. Baylor, a graduate of the University of Illinois, served in various capacities in the fertilizer industry with Ayco Chemical Co. and Smith-

Douglass Co., Inc., prior to joining Sohio.

2 Niagara Managers Named

MIDDLEPORT, N.Y.—Appointment of E. W. Kaegebein and F. R. Racine as regional managers in the southeastern agricultural department was announced by Niagara Chemical division of Food Machinery & Chemical Corp. At the same time, Dr. Oscar F. Hobart, Jr., was named the department's technical service to sales representative.

Mr. Kaegebein will direct activities of the region headquartered at Ayden, N.C.—including northwest Florida, Alabama, Georgia, North Carolina, South Carolina and eastern Tennessee. Mr. Racine will have charge of the region based at Tampa, Fla., and taking in all but the northwest and southeastern portions of the state. Dr. Hobart, as technical service representative, will cover the complete southeastern area.

Joins Sales Staff

NEW YORK—Commercial Solvents Corp. has named G. L. Dozier to its agricultural chemical sales staff, according to Loy A. Everett, sales manager for CSC's agricultural chemicals department.

Mr. Dozier is assigned to the Southeastern district with headquarters at the company's Atlanta, Ga., office. He will reside in Macon, Ga. Mr. Dozier has been associated with the fertilizer industry for the past 16 years, and prior to this was with the U.S. Department of Agriculture.

He is a past president of the Georgia Plant Food Educational Society.



G. L. Dozier

Michigan Representative

HOLLAND, MICH.—H. R. Smith, manager of the Smith-Douglass Co.'s Holland plant, has announced the appointment of Dale W. Batchelor as sales representative in the immediate area of the Holland plant.

Mr. Batchelor, an agronomy graduate of Michigan State University, was associated with the public school system of Harbor Springs before his employment with Smith-Douglass.

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Vice President Appointed

WASHINGTON—The Sulphur Institute announced the appointment of Dr. Rene Leclercq as its vice president.



Dr. Rene Leclercq

Dr. Leclercq has been serving as research director for Union Chimique Belge in Belgium since 1956. The announcement was made here by Dr. Russell Coleman, president of the international research organization. Dr. Leclercq will be in charge of the European office of the institute, located in London. He will be responsible for the institute's program of research and education dealing with the uses of sulphur in all its forms in Europe. The program will be developed in cooperation with private and public research and educational agencies in Europe. It is anticipated that the institute studies will relate to the value of both existing and new uses of sulphur.

Dr. Leclercq is a native of Belgium. He holds a degree in civil engineering as well as a Doctor of Science degree in chemistry from the University of Brussels.

Monsanto Appointment

ST. LOUIS—Monsanto Chemical Co. has named Charles L. Fetzner of San Francisco senior sales representative in the western U.S., a new executive position in Monsanto's agricultural chemicals division.

Mr. Fetzner will have direct sales responsibility for many of the division's major customers in the area.

Succeeding Mr. Fetzner at San Francisco as sales manager of the division's western district is Robert L. Olcott of Kansas City, Mo., who has been assistant manager for the St. Louis district.

Retirement Announced

LOS ANGELES—Edward M. Kolb, assistant to the vice president of marketing and director of potash sales for American Potash & Chemical Corp., has retired after 28 years of

service with the company.

Mr. Kolb, who made his headquarters at AP&CC's New York sales office, had been with the company since 1932.

At the time of his retirement he was a member of the boards of directors of the American Potash Institute and the Potash Export Assn.

He will continue to serve the American Potash & Chemical Corp. as a consultant to W. J. F. Francis, vice president, marketing, and Dr. A. J. Dirksen, general sales manager, eastern.

To Head Sales, Development

NEW YORK—Frederick W. Hosterman has been appointed manager of agricultural sales and development for Climax Molybdenum Co., a division of American Metal Climax, Inc., Reuel E. Warriner, Climax sales vice president, announced.

He succeeds William M. Stilwell who has been advanced to manager of lubricant sales and development. Prior to joining Climax, Mr. Hosterman was a sales representative in the inorganic chemicals division of Monsanto Chemical Co. where he covered the Midwest and, more recently, the western New York state territories.

Mr. Hosterman is a graduate of the University of Nebraska, obtaining his Bachelor of Science degree in agronomy in 1952 and his master's degree in 1954.

Appointed by Cyanamid

NEW YORK—Melvin C. Firman has been appointed assistant to the manager of research and development, agricultural division, American Cyanamid Co., and will report to Dr. J. T. Thurston, effective immediately, replacing Dr. J. H. Ware, who was recently promoted to director of the product research laboratories.

Prior to this new assignment, Mr. Firman was manager of technical service for the fine chemicals division. Before that he was associated with the development of the use of antibiotics in foods and new antibiotic research.

He received his B.S. in bacteriology at the Philadelphia College of Pharmacy and Science in 1940.

Iowa Salesman Named

NORFOLK, VA.—F. S. Royster Guano Co., Norfolk, has appointed Ronald S. Buhr sales representative in northeastern Iowa. He will work out of Royster's Madison, Wis., sales office.

A native of Iowa, Mr. Buhr graduated from the College of William and Mary, Norfolk, in 1958.



Robert J. McDonald



T. I. B. Gray

Bemis Promotes Two

ST. LOUIS—Robert J. McDonald has been appointed assistant manager and T. I. B. Gray sales manager of the packaging service unit of Bemis Bro. Bag Co., announced H. V. Howes, director of sales.

The company's packaging service, located in Minneapolis, designs and

manufactures bag filling, closing and conveying equipment, and also provides plant survey services for installation and improvement of packaging operations of customers.

In the announcement, Mr. Howes said Mr. McDonald will succeed William J. Geimer as manager of the division when the latter retires on Jan. 31, 1961.

Mr. McDonald joined Bemis in Omaha, Neb., in 1935.

Mr. Gray has served as an industrial engineer, personnel assistant and sales representative with Bemis since 1949.

To Supervise District

NEW YORK—The appointment of James G. Shirley as central district field sales manager for agricultural chemicals produced by Allied Chemical's General Chemical Division has been announced by Thomas W. Collins, agricultural chemicals sales manager.

With the division seven years, Mr. Shirley will supervise sales in Illinois, Iowa, Kansas, Missouri and Nebraska with headquarters at the St. Louis sales office.

Mr. Shirley previously served as agricultural chemicals salesman in the central district, and has been stationed at St. Louis, Omaha and Evanston.

Salesmen Relocated

ST. LOUIS—Two members of the field sales staff of Monsanto Chemical Co.'s Agricultural Chemicals Division have been relocated, effective immediately.

Darwin Holland, sales representative at Jackson, Miss., for the New Orleans district, transfers to Columbus, Ohio, to service the Cincinnati district.

Claiborne L. Barber, assistant sales manager for the New Orleans district, moves from that city to Jackson, adding to his responsibility those accounts previously handled by Mr. Holland.

New Department Formed By Allied Chemical

NEW YORK—A new agricultural chemical development department has been formed by Allied Chemical's general chemical division to combine and extend functions previously handled by research, product development and technical service staffs, announced John L. Damon, director of agricultural chemicals.

Mr. Damon reported the new department will "take promising products from research and develop them for marketing." One phase of this work will include the conducting of the department's own field tests with new products to supplement information obtained from federal and state pesticide evaluation projects. Another activity of the development department will be to expand the markets for both newly-introduced and certain standard products.

Mr. Damon announced that B. C. Macdonald will serve as staff supervisor with A. J. Huvar and C. A. Hamsher as assistant supervisors for eastern and western states, respectively.

Technical specialists responsible for individual districts will include: Dr. W. D. Shea, New England; G. S. Batchelor, mid-Atlantic; G. H. Beames, southeastern; F. L. Bailey, southwestern; J. R. Caylor, central; Joseph Goeppner, Great Lakes; H. W. Ernst, northern; R. H. Daehnert, western, and J. C. Hochhaus, northwestern.

CUSTOM SPRAY SCHOOL

URBANA—H. B. Petty of the University of Illinois has announced that the 13th annual Custom Spray Operators' Training School will be held Jan. 25-26.

Minnesota Short Course Program Plans Announced

ST. PAUL, MINN.—The 10th annual soils and fertilizer short course will be held in Coffey hall auditorium on the St. Paul campus of the University of Minnesota Dec. 5, announced J. O. Christianson, director of agricultural short courses at the university.

Theme of the course will be "Soil Fertility and Management in the Decade Ahead."

Expected to attend will be several hundred dealers and other representatives of the fertilizer industry, plus others interested in soils and fertilizers.

One of the highlights of the short course will be a talk on "Agronomic Education and Service" by Harold Jones, director of the Kansas State University Agricultural Extension Service, Manhattan, Kansas.

The morning program will include a welcome address from T. H. Fenske, associate dean of the University of Minnesota Institute of Agriculture, and a talk on "The Changing Farmer and Changing Land Use" by Roland Abraham, assistant director of the University of Minnesota Agricultural Extension Service.

"Increased Flexibility in Soil Management—Possibilities with Fertilizer and Tillage" will be discussed during the morning by Curtis Overdahl, extension soils specialist, and Richard Rust, assistant professor of soils, will speak on "A New Look at Land Use."

A. C. Caldwell, professor of soils, will report on new studies of plant populations, fertility level and moisture in Minnesota's corn belt.

The closing discussion of the morning will be presented by Lowell Hanson, extension soils specialist; John Grava, assistant professor of soils, and Donald Hasbargen, Mower County agricultural agent. They will report on the effect of commercial fertilizers on 75 Minnesota corn fields.

University of Minnesota soils department highlights will be presented at the opening afternoon session by W. P. Martin, head of the department. William H. Kircher, editor-in-chief of the Farmer magazine, will discuss "Our European Neighbors—Will They Buy What We Produce?"

The remainder of the day will be devoted to workshop sessions under the chairmanship of Richard Rust. The workshop meetings will be held in designated sections of the St. Paul campus student center.

Delbert L. Rucker in Sulphur Institute Post

WASHINGTON—Appointment of Delbert L. Rucker as director of information for the Sulphur Institute was announced Nov. 1 by Dr. Russell Coleman, president. Mr. Rucker, who has been with the National Plant Food Institute since its formation in 1955 and with the former National Fertilizer Assn. the two years previous, will take up his new duties Nov. 16.

He is a native of Pullman, Wash., and a graduate of Washington State University.

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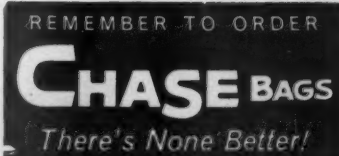


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Official Asks for More Insect Control Program Research

EAST LANSING, MICH.—A Michigan Department of Conservation official has stated that the recent explosion of anti-pesticide sentiment, although much of it emotional in nature, indicates that we undertake extensive control programs without first making adequate preliminary appraisals.

Justin W. Leonard, assistant deputy director of research, Michigan Department of Conservation, said at a Michigan Agricultural Pesticide Conference at Michigan State University Nov. 1-2, that public outcry started when the application of insecticides and herbicides began to be made on a large scale, involving privately owned lands without securing individual approval.

Our first public relations problems with pesticides involved the application of herbicides to roadsides and the use of chemical debarking agents by the pulpwood industry, which in both cases caused the loss of wildlife, Mr. Leonard said.

He said that the crash program undertaken a few years ago to knock out the gypsy moth met with comparatively little public resistance. This, he said, was due to a good public education program before the project was carried out.

But real trouble arose, he declared, through attempts to control the deadly Dutch elm disease. The best methods presently known for combating its transmission pose a threat to animal life, especially songbirds, in the immediate control area, he said.

Control of forest insect pests has been undertaken, he said, by means of aerial spray without arousing much apprehension. Dosages have, for the most part, been held to one pound of chemical per acre, and great care has been taken to avoid spraying lakes or streams, he added.

But such insects as the European pine shoot moth and the Japanese beetle call for greater dosages per acre, and over extensive acreages, he stated.

Mr. Leonard said that the problem of pesticide effects on wildlife is a serious one. But he also warned of the consequences to the production of food and fiber if the use of pesticides were to be banned.

He brushed aside the argument that insects help to cut down on the heavy expense of agricultural subsidies and surplus storage. In Michigan, for example, the use of pesticides in the protection of crops eligible for support is quite small, and heavy users are the fruit and vegetable producers whose operations receive no subsidy and whose output rarely results in surpluses, he said.

Mr. Leonard said that apparently little or no attempt is made to assess the effects of either chemicals or application methods on the general ecology of a region before they are recommended for use.

"I earnestly believe pesticide manufacturers would be protecting their own interests if they were to make such ecological tests a regular part of their evaluation of new products," he said.

Mr. Leonard said a recent federal grant for research on the effects of pesticides on wildlife "would enable us to get some reliable facts and free us from depending on piecemeal observations made without systematic design."

"When we know the full consequences of a given type of chemical, we will be in a better position to make recommendations for control programs which will do the job intended, yet will not harm our wildlife," he concluded.

SOUVENIR GIFT BACKFIRES

MIAMI—Souvenir gifts of cotton seeds turned out to be a menace in disguise. American Legionnaires from Holly Springs, Miss., visiting here, have been handing out little packets of "genuine Mississippi cotton seeds." Unknown to them, U.S. Department of Agriculture agents in south Florida spent a great deal of time and money to eradicate all cotton plants in the area; the reason—pink boll worms.

Don Alexander, supervisor of the U.S. Plant Pest Control Center in Miami, explains it this way: "It is specifically against the law to plant cotton in the 17 southern counties of Florida because of the dangers of infestation from pink boll worms."

"The worm is now under control in all U.S. cotton districts but the pink boll worm moth still flies into Florida from Cuba. Because we've eliminated all the cotton in the area, the moths die without laying eggs."

"But if there was cotton here, the cycle would be repeated and pretty soon the boll worm moths would find their way to the cotton fields of north Florida, Georgia and Mississippi."

The Legionnaires are making every effort to call back the seeds and warn residents against planting them.

Pennsalt, Nutrilite Announce Joint Insecticide Program

TACOMA, WASH.—Nutrilite Products, Inc., and Pennsalt Chemicals Corp. announced that the companies are in the process of completing details for a joint effort in manufacturing and marketing biological insect control products. An agreement for exclusive national representation is expected to be reached shortly.

Nutrilite Products, Inc., has received notice of registration from the U.S. Department of Agriculture for "Biotrol," a biological insecticide product. Registration has also been granted by California. Previous to this, an exemption from tolerance was obtained from the Food and Drug Administration, Department of Health, Education and Welfare.

In the impending cooperative effort, officials of both companies have stated that Pennsalt Chemicals Corp., through its agricultural chemicals division, will contribute its experience in marketing, field trials of new products, market studies, etc. Nutrilite Products, Inc., will continue its research activities, encompassing insect pathology, insect entomology, biology and biological process development, and will produce the biological insecticide products.

California Chemical Begins Construction Of \$22 Million Plant

FORT MADISON, IOWA—The Ortho Division, California Chemical Co., began construction Oct. 26 of its new \$22,000,000 fertilizer plant on a 425 acre site on the Mississippi River near Fort Madison. This plant, when completed in approximately one year, will be one of the largest fertilizer production centers in the world, the company says.

The entire town of Fort Madison is cooperating in getting the new Ortho plant started. At the ground breaking ceremonies Gov. Herschel Loveless of Iowa, Sen. H'ckenlooper of Iowa, Rep. Fred Swingle and H. J. Grady, president of the Ortho Division of California Chemical Co., were among those present.

WEED CONFERENCE SET

SALEM, ORE.—New ways to control costly weeds in vegetable and small fruit crops will be spotlighted at this year's annual Oregon Feed Conference, reports Rex Warren, extension farm crops specialist at Oregon State College. The ninth annual conference will be held Nov. 15-16 in the Veterans of Foreign Wars Building in Salem, Mr. Warren said. The meeting will start at 10 a.m., and all growers, industry people and others interested in new ways to control weeds are welcome to attend, he added. Phil Beilke, Brooks, Ore., is president of the conference.

TONNAGE REPORTS

Arkansas

LITTLE ROCK, ARK.—Fertilizer sales in Arkansas for September, 1960, amounted to 13,379 tons, or slightly less than the 15,111 tons reported for the same month last year, said the State Plant Board. Total sales July through September, 1960, amounted to 42,603 tons compared with 41,802 tons for the similar period a year ago.

Oklahoma

STILLWATER, OKLA.—Fertilizer sales in Oklahoma during September amounted to 38,198 tons, compared with 29,519 tons for the same period a year ago. Most popular grade was 10-20-10 with 6,663 tons sold and most popular material was ammonium phosphate 16-20-0, with 5,419 tons sold.

Florida

TALLAHASSEE, FLA.—Florida sales of fertilizer in September amounted to 82,290 tons, reported the Fertilizer Statistical Division, State of Florida Department of Agriculture. This broke down to 35,227 tons of fertilizer materials and 47,063 tons of mixed grades.

NAMED DISTRIBUTOR

CEDAR RAPIDS, IOWA—Valley Truck Equipment Co., Valley Park, Mo., is a new distributor for Highway Equipment Co., Cedar Rapids.

Bag Company Offers Creative Design Service

NEW YORK—A new creative design service is being offered to multi-wall bag customers by West Virginia Pulp & Paper Co.

The creative service offered by the multiwall bag division provides printing, color and layout, which is translated into a series of preliminary and finished designs—all without cost to the customer. The service will create new designs or revise and modernize existing designs.

Wisconsin Pesticide Meeting Dates, Location Announced

MADISON, WIS.—The 15th annual Wisconsin Pesticide Conference with Industry will be held at the University of Wisconsin Jan. 5-6, with Dr. Donald R. Peterson, of the UW Department of Agronomy, as general chairman.



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Expert Advises Trade . . .

Sell on Basis of Worth to Farmer, Rather Than Price of Fertilizers and Pesticides

A NEW CONCEPT of marketing fertilizers was urged by a speaker at the recent Northeastern Fertilizer Conference. His idea of selling, while not particularly new, does seem worth repeating at this time when thought is being given to sales programs for the 1961 season.

The speaker, Dr. Hector Lazo, professor of marketing at the graduate school of business administration, New York University, said that manufacturers no longer sell mere products, but instead, they sell customer satisfaction. "This is part of the new marketing orientation and the successful manufacturers of the 1960's are those who adopt this new philosophy, research the customer wants, and gear their production and distribution practices to satisfy those wants."

Dr. Lazo, looking in on the agricultural chemical field from an outsider's viewpoint, spoke a little more plainly, perhaps, than would observers within the trade itself. He declared that danger signals are up, and the industry appears to have reached a sales plateau which indicates that sales are just holding their own and that is all. However, the speaker went on, there are new markets that beckon the unafraid. "Those who dare to go after these markets will find most rewarding profits awaiting them," he promised.

The chemical industry as a whole was cited for having given "lip service to the new marketing needs of America and the world, but have done little else. A mere handful of companies has

reorganized for the new marketing," he went on. "Those will be the outstanding leaders of tomorrow, for the laggards will not be able to meet competition."

That both marketing and production are important in the chemical trade was emphasized by the speaker, but those who are getting ahead are the ones who have discovered new markets, new potentials, and new ways and means of developing profitable sales.

Although he did not say specifically that the manufacturers of both pesticides and fertilizers should sell their products on the basis of their economic value to the farmer, this thought was certainly implied. Materials with the proved worth of fertilizers and pest control chemicals need not and should not be sold on price alone as is too often the case.

A new concept of marketing . . . of selling these products as a means of making a profit for the farmer, is a sounder and more effective appeal to the ultimate user.

Perhaps 1961 may be the turning point where price alone ceases to be the all-important consideration it appears to be now in many areas. Granted that economical purchase of fertilizers and other agricultural chemicals is important to the farmer, it is becoming increasingly important that he, the user, receive the kind of service and counsel which he can expect only if the seller's profit margin is large enough to warrant these necessary extras.

creased in importance in 1960, while others, such as soybeans, decreased.

Despite the fact that there was an overall increase in herbicide expenditures, some brands appeared to lose in sales on a national scale. There appeared to be a considerable number of changes in brand preferences, the survey indicated, with some products losing their competitive positions in specific areas and gaining in others. Since the survey was made on a national scale, significant variations in findings were noted between major agricultural regions.

Thus the survey confirms once more a fact that every marketing man in the trade already knows: That the market is a very complex and dynamic one, with an almost constant shifting of farmer buying patterns.

Marketing planners in this industry must be capable of performing some most unusual contortions in keeping their eyes on a crystal ball, their ear to the ground, hitching their sales wagons to a star and, at the same time, keeping both feet securely planted on terra firma.

Low Inventories Reported

LOWER INVENTORIES in most businesses have been reported by Fortune magazine, based on a recent survey by the publication. The report of course included all types of manufacturers, wholesalers and retailers.

Producers of chemicals, Fortune says, have about a 4% inventory surplus, but expect improving sales will take care of a large part of this overage. Other portions of the economy are also in a favorable position. "Today," the economists say, "every indication points to steady or rising sales of goods to final users. Buying for inventory, in short, far from worsening, can only improve."

Herbicide Sales Increase 7% During 1960 Season

HERBICIDE SALES in 1960 increased 7% over those of 1959, according to results reported by Doane Agricultural Service following a marketing research project conducted recently by the organization. The increase was brought about despite a slight decline in the number of farmers using weed killers during the year, the report says.

There are a number of interesting aspects to this report. In the first place, there appears to be a wide fluctuation in the types of chemicals purchased by farmers. Pre-emergence products, for example, showed an increase in sales of about a third in 1960, while post-emergence materials gained 11%. Against these increases, however, were drops of considerable magnitude in the sale of chemicals to kill weeds and brush in pasture or non-crop areas.

The Doane survey noted further that the percent of total acres of cropland treated remained virtually the same in 1960 as in 1959, which must be interpreted to mean that more intensive use of herbicides was practiced in 1960 by a fewer number of farmers.

Although there was a large increase in sales of pre-emergence materials, the number of farmers using them also declined slightly. Apparently, many farmers who were experimenting with pre-emergence use, or who were using it in a limited way in 1959, went into large scale use in 1960.

In regard to use of herbicides in crops, similar variations occurred. Applications on the acreage of corn planted increased from 47% in 1959 to over 56% in 1960. Corn receives greater usage of herbicides than any other crop. Some crops in-



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MEETING

MEMOS



Nov. 15-16—Oregon Weed Conference, Oregon State College, Salem, Ore.

Nov. 16—NFFI Western Industry Advisory Committee meeting, Coronado, Cal.

Dec. 5-8—American Society of Agronomy meeting, Morrison Hotel, Chicago.

Dec. 13-14—Empire State Soil Fertility Assn. meeting, Ithaca, N.Y.

Dec. 15-16—Indiana Fertilizer Conference, Memorial Center, Purdue University, Lafayette, Ind.

1961

Jan. 5-6—15th Annual Wisconsin Pesticide Conference with Industry, University of Wisconsin, Madison, Wis.

Jan. 10-11—Annual Winter Meeting, Ohio Pesticide Institute, Nationwide Inn, Columbus, Ohio.

Jan. 11-13—1961 Beltwide Cotton Production—Mechanization Conference, Poinsett Hotel, Greenville, S.C.

Jan. 24—Discussion on current recommendations for the control of pests in Kentucky, Room 232, Agricultural Experiment Station, University of Kentucky, Lexington, Ky.

Feb. 9-10—Winter meeting, Fertilizer Section, National Safety Council, Tampa, Fla.

March 13-15—Spring meeting of Western Agricultural Chemicals Assn., Disneyland Hotel, Anaheim, Cal.

Meeting Memos listed above are being listed in this department this week for the first time.

Nov. 14-17—Seed and fertilizer clinics, University of Illinois: Nov. 14, Vandalia; Nov. 15, Macomb; Nov. 16, Dixon and Nov. 17, Urbana.

Nov. 17—New Jersey Pesticide Dealers' Conference, Blake Hall, College of Agriculture, Rutgers University, New Brunswick, N.J.

Nov. 9-11—National Fertilizer Solutions Assn., annual convention, Peabody Hotel, Memphis, Tenn.; Muriel F. Collier, executive secretary.

Nov. 13-15—California Fertilizer Assn., 37th annual meeting, del Coronado Hotel, Coronado, Cal.

Nov. 14-19—Mexican Association of Insecticide and Fertilizer Manufacturers, Merida, Yucatan.

Nov. 21—South Carolina Plant Food Educational Society annual meeting, Clemson House, Clemson, S.C.

Nov. 22—Tenth Semi-Annual Meet-

ing, Manufacturing Chemists' Assn., Statler Hilton Hotel, New York City.

Nov. 28-30—Soil and Crop Science Society of Florida, Fort Harrison Hotel, Clearwater, Fla.

Nov. 28-Dec. 1—Eighth Annual Meeting, Entomological Society of America, Haddon Hotel, Atlantic City, N.J.

Nov. 29—Oklahoma Fertilizer Dealers Conference, Oklahoma Plant Food Educational Society and Oklahoma State University co-operators, Huckins Hotel, Oklahoma City, Okla.

Nov. 30—New Jersey annual fertilizer conference, Rutgers University, New Brunswick, N.J. Sponsored by Plant Food Educational Society of New Jersey.

Dec. 1-2—Ohio Fertilizer and Lime Conference, Agricultural Administration Building, Ohio State University, Columbus, Ohio.

Dec. 4-7—Winter Meeting, American Society of Agricultural Engineers, Peabody and Chisca Hotels, Memphis, Tenn.

Dec. 5—Washington Liquid Fertilizer Dealers Assn., Annual Meeting, Davenport Hotel, Spokane, Wash.

Dec. 5—Annual Meeting, Washington Liquid Fertilizer Dealers Assn., Davenport Hotel, Spokane, Wash.

Dec. 5-7—Annual Meeting, Carolinas-Virginia Pesticide Formulators Assn., Carolina Hotel, Pinehurst, N.C.

Dec. 12-14—North Central Weed Control Conference, Hotel Schroeder, Milwaukee, Wis. T. W. Tibbets, Department of Horticulture, University of Wisconsin, Madison, public relations committee.

Dec. 14—Louisiana Fertilizer Conference, Louisiana Plant Food Educational Society and Louisiana State University co-operators, Baton Rouge, La.

1961

Jan. 4-6—Northeastern Weed Control Conference, 15th annual meeting, New Yorker Hotel, New York City.

Jan. 5-7—Eleventh annual convention, Agricultural Aircraft Assn., Inc., Hotel El Dorado, Sacramento, Cal.

Jan. 6-7—Western Colorado Horticultural Society, Annual Meeting, Civic Auditorium, Grand Junction, Colo.

Jan. 9-10—Texas Plant Food Conference, Texas Plant Food Educational Society and Texas A&M co-operators, College Station, Texas.

Jan. 11-13—Agricultural Ammonia Institute, 10th annual convention, Memphis, Tenn.

Jan. 12-13—Arizona Aerial Applicators Assn. 8th annual conference, The Wigwam, Litchfield Park, Ariz.

Jan. 17—Annual meeting of Georgia Plant Food Educational Society, Continuing Education Center, Athens, Ga.

Jan. 17-18—Third annual Agricultural Pesticide Conference, Purdue Memorial Center, Purdue University, Lafayette, Ind.

Jan. 17-18—Arkansas Plant Food Conference, Arkansas Plant Food

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Educational Society and University of Arkansas co-operators, Little Rock, Ark.

Jan. 18-19—Eighth Annual Western Agricultural Chemicals Assn. Northwest Conference, Benson Hotel, Portland, Ore.

Jan. 18-20—14th Annual Southern Weed Conference, Hotel Soreno, St. Petersburg, Fla.

Jan. 19-20—14th annual Southern Farm Forum, Roosevelt Hotel, New Orleans, La.

Jan. 23-25—Southeastern Branch, Entomological Society of America, 35th annual meeting, Admiral Semmes Hotel, Mobile, Ala.

Jan. 25-26—Symposium on "Effects of Environment on Crop Response to Fertilizers," Tennessee Valley Authority Fertilizer Development Center, Muscle Shoals, Ala.

Feb. 1-2—Soil Science Society of North Carolina Annual Meeting, Williams Hall, North Carolina State College, Raleigh, N.C.

Feb. 14-15—Second Annual Aquatic Weed Control Society meeting, LaSalle Hotel, Chicago.

Feb. 15—"Pesticides Review for Coastal Counties," sponsored by Western Agricultural Chemicals

Assn. and California State Polytechnic College, on campus, San Luis Obispo, Cal.

INDEX OF ADVERTISERS

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Ashcraft-Wilkinson Co.	26
Barnard & Leas Mfg. Co., Inc.	8
Blue, John, Co.	26
Chase Bag Co.	26
Continental Sales Co.	23
Duval Sulphur & Potash Co.	26
Grace Chemical Co.	11
Highway Equipment Co.	22
Larson, L. L., Machines, Inc.	25
Meredith Publishing Co.	13-19
Meyer, Wilson & Geo., & Co.	21
Molded Fiberglass Body Co.	27
Reasor-Hill Corp.	29
Reuel Little Tree Injector	12
Successful Farming	13-19
Texas Gulf Sulphur Co.	5
Tyler Mfg. Co.	20
U. S. Industrial Chem. Co.	3

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